Machinery.

ENGINEERING EDITION.

Index to Vol. XIV.

September, 1907, to August, 1908.

1908.

THE INDUSTRIAL PRESS.

49-55 LAFAYETTE ST.,

NEW YORK.

Index to Vol. XIV.

Abbott, P. W.:
Annealing Novo and Blue Chip Steel 178
Ability, The Recognition of. 452
Abrasive Disks on Cast Iron, Comparative Test of..... 880
Abroad, On Sending Electrotypes. Robert Grimshaw.. 707
Absorption Dynamometer ... 94
Accident at Different Ages, Liability to 774
Accident on the Long Island R. R., Peculiar..... 870
Accidents Occurring in the Making of Steel 233
Accumulator Cars on German Railways 90
Accurate Drilling, Method of. Y. Ziegler 885
Adams Co.:
Farwell Automatic Spur Gear Hobbing Machine.. 727
Adams-Farwell Aeronautic Gasoline Motor 758
Addis, W. H.:
Reaming a Taper Sleeve... 326
Don'ts for Machinists..... 444
Adjustable Collet Chuck, Quick-Action 186
Adjustable Collet Co.:
Adjustable Collet with Draw-in Attachment 408
Adjustable Hollow Mill. W. Alton 890
Adjustable Tap, Large. Ethan Viall 708
Adjusting the Feed of a Rotating Cutting Tool in Proportion to the Working Pressure, Device for..... 531
Advertising Manager, Practical Ideas from an..... 664
Advertising Medium, Value of a Treatise as an..... 497
Acme and Square Thread Taps in Sets 169
Adapting Building to Needs of Machine Tool Business. 221
Addition and Subtraction on the Slide Rule. Wm. C. Michael 106
Adjustable Reamer, Operations in Manufacturing Smith's 101
Adjustable Reamer, Smith Micrometer 484
Adjustable Tap, German Design of 867
Adjustment of Spark Coils, The Proper 111
Adulterations in Belts and Leather, Investigating. J. M. Menegus 179
Advertising Matter Entering Australia, Duty on..... 272
Aerial Navigation 281
Aerial Navigation, Another Step in the Accomplishment 786
Aeronautic Gasoline Motor, Adams-Farwell 758
Aeroplane Heavier than Air, Test of 455
Agents, Not Always Best Policy to Sell Through.... 144
"Agrippa" Pipe and Fittings Wrench 60
Ainscough, Wm.:
Micrometer Scale 633
Air Compressors, G. E. Centrifugal 257
Air, Dividends and Foul.... 532
Air Gage, Piping an. M. E. Canek 86
Airship, Count Zeppelin's Successful Trial of His.... 852
Airships, German Government's Interest in..... 534
Air-Hardening Steels, To Anneal High-Speed and. A. A. Stevenson 551
Alcohol and Gasoline as Engine Fuels, Comparative Value of 588
Alcohol from Peat to be erected in Germany, Plant for Manufacturing 751
Alcohol in Germany, Production of Denatured 553
Alcohol Instead of Petrol Used as Fuel for Motor Cars 380
Alcohol, Price of Free..... 455
Alcohol, Production and Use of Denatured 379
Alcohol, Production of Denatured 454
Alignment Tests of LeBlond Milling Machines 669
Allan:
Notes on Centering..... 107
Cutting a Special Cam.... 109
Babbitting Kink 112
Pulley Balancing Device... 882
Alloy Steels, Large Amount of Manganese Used for.... 450
Alloys of Silicon, Some Interesting Facts about 526
Alton, W.:
Milling Fixture for Finishing Gear Segments..... 395
Does Premium Work Always Pay?..... 884
A Special Drill Chuck..... 890
Adjustable Hollow Mill.... 890
Aluminum Bronze, Proper Amount of Aluminum to be Used in 305
Aluminum Castings, Cause of Cracking of 308
Aluminum Cutting, Lubricant for. A. A. Stevenson..... 551
Aluminum for Overhead Transmission 156
Aluminum, Increase in Use of 526
Aluminum, Lubricant for Cutting. Gregor 179
Aluminum Solder. L. Miller. 551
Aluminum, Soldering 864
Aluminum Threads, Lubricant for Fitting. Sregor.. 551
Ambler, William L.:
Shifting Two Belts with One Lever 47
American Locomotive Co.:
A Drafting Apprenticeship Course 39
American Machine Tools, Imitation of. David R. Millington 399
American Machine Tools in Europe 161
American Machine Tools in Great Britain, Large Use of 232
American Machinist celebrates Thirtieth Anniversary 273
American Mechanic in Europe, An. Oskar Kylin:
1 577
2 660
3 746
4 829
5 908
American School of Correspondence. New Building for the 209
American Society of Mechanical Engineers, Annual Meeting of the 269
American Society of Mechanical Engineers, Spring Meeting of the 834
American Steam Gage and Valve Mfg. Co.:
Vest Pocket Speed Counter 907
American Swiss File and Tool Co.:
Making Swiss Files in America—
1 9
2 80
American Tool Wks. Co.:
2-foot Radial Drill 827
Ames, B. C., & Co.:
Dial Gages for Accurate Measurements 264
Andrew & Co., M. L.:
Multiple Drilling Machine. 193
Improved Multiple Drilling Machine 574
Andrews, Albert:
Worm-cutting Tool 252
Andrews, A. A.:
Pirating 548
Angle Measuring Instrument Made by Schellenbach-Hunt Tool Co. 825
Angles, A Simple Tool for Measuring 867
Angle of Bevel Gears, To Obtain Face 477
Angles of Hopper Side Intersections 579
Angular Milling Cutters, Fixture for Grinding. P. Yorgensen 323
Angular Movements with the Index Head, Obtaining. John Edgar 47
Angular Movements with the Indexing Head, Obtaining. J. Price 323
Anneal High-speed and Air-Hardening Steels, To. A. A. Stevenson 551
Annealed, Tools Made from Files should be 474
Annealing High-speed Steel. C. U. Scott 173
Annealing Novo and Blue Chip Steel. P. W. Abbott 178
Anti-Friction Bearings, Efficiency of Automobiles Increased by the Use of..... 672
Anvil, Bench Vise 112
Appendicitis, Iron Dust Alleged Cause of 77
Apprentice Training, College and 137
Apprentices, Action Affecting Status of 91
Apprentices in Foundry Work, Training of 381
Apprenticeship, An Old-Time. Back-Number Apprentice... 245
Apprenticeship Course, A Drafting 39
Apprenticeship System, Exhibit of Committee on (Master Mechanics Convention) 663
Apprenticeship System for Training Draftsmen, General Electric Co.'s..... 85
Approximate Fractions by the Method of Continued Fractions, How to Obtain. Mitchell Dawes 877
April-Fool Joke in a Technical Journal 664
Aqueduct from Catskills to Increase New York City's Water Supply 870
Arbors, Saw. Pennsylvania. 108
Arbors, To Make Accurate. Foster Hillix 626
Arc, Obtaining the Height of the Middle Ordinate of an. H. S. Quackenbush..... 886
Arc, Rule for Obtaining the Middle Ordinate of an.... 470
Arc, To Obtain the Height of the Middle Ordinate of an 255
Arch in the World, Second Largest Masonry 786
Arithmetical Expressions, Puzzling. D. W. James..... 632
Armature Banding and Field Coil Winding Lathe..... 647
Armature Disks, Punch and Die for 41
Armature Notching Machine, Zeh and Hahnemann..... 268
Armor Plate, Forging and Machining at the Bethlehem Steel Works 501
Armor-Plate Vault, A Record-Breaking 131
Armstrong-Blum Mfg. Co.:
Hack Saw Producing Drawing Cut 828
Armstrong Bros. Tool Co.:
Short Ratchet Drill..... 740
Armstrong, Geo. W.:
Cam Applications 753
Flexible Shafts 803
Aroson, Samuel G.:
File for MACHINERY's Data Sheets 884
Articles and Technical Papers, Preparation of Engineering 30
Artificial Gems, Construction of 786
Artificial Light on Vegetation, Effect of 871
A. S. M. E., April Meeting of the 664
A. S. M. E., December Meeting of the 282
A. S. M. E., M. L. Holman, President of the 282
A. S. M. E. Papers, The December Meeting 307
A. S. M. E., Spring Meeting of the 663
Atkins (E. C.) & Co.:
Variable Stroke Quick Return Hack-Saw..... 188
Australia, Duty on Advertising Matter Entering 272
Australia Removes Tariff from Catalogues, etc..... 613
Austrian Petroleum into Germany, Increase of Imports of 612
Auto Cylinders, Vanadium and 279
Automatic Drill Drift Co.:
Automatic Drill Drift..... 828
Automatic Machinery, Limitation of 785
Automatic Slotting Machine. 335
Automatic Specialty Co.:
Combination Foot and Power Press 266
Automatic Stop for Drill Press. S. Oliver 175
Automobile, A Record with an 21
Automobile Business in the United States, Extent of the 614
Automobile Contest, Finish of Pekin-Paris 156
Automobile Contest, General Conclusions from the A. C. A. Sealed Bonnet..... 27
Automobile Driving, World's Record in 789
Automobile Dynamometer, The A. C. A. 461
Automobile Engineering to be Instituted at Berlin Technical Institute, Course in. 698
Automobiles Entirely for Municipal Purposes, Milwaukee to Use 786
Automobile Factory Wrinkles, Some. Howard Greene.... 46
Automobile Fire-Engines and Horse-Drawn Engines, Comparative Cost of 26
Automobile, Highest Speed Obtained by 232
Automobile Situation, The.. 155
Automobile Situation, Unpromising 455
Automobile Transmission, Efficiency of 799
Automobiles as Commercial Vehicles 309
Automobiles in Use in Germany, Large Number of.. 613
Automobiles Increased by Use of Anti-Friction Bearings, Efficiency of 672
Automobiles, Test of Endurance of 497
Axle Centering Tool, Driving. W. W. Williams 469

Babbitting Kink. Allan 112
Babbitt Riveting Block. C. H. Ramsey 400
Bachmann, H. J.:
Drilling and Reaming in the Lathe 467
Back-Geared Crank Shaper, Rhodes 12-inch 563
Back-Number Apprentice:
An Old-Time Apprenticeship 245
Baker Bros.:
Special Reaming and Tapping Machine 640
Balanced Industrial Conditions 307
Balancing, Cream Separator Bowl, Yankee 16
Balancing Device, Pulley. Allan 882
Balancing, Dynamic 24
Baldwin Locomotive Works' Output for 1907..... 507
Baldwin Locomotive Works, The Magnitude of the..... 380
Ball Bearing, Chapman Double 116
Ball Bearing Cone Centers. F. R. Peirce..... 550
Ball Bearings:
1 237
2 312
Ball Crank, Cincinnati Quick-Action 566
Ball Grinding Fixture. W. A. Sawyer 631
Baltic and Adriatic Seas, Canal to Connect 233
Band-Saw, Cutting Steel with a. Ethan Viall..... 802
Band-Wheel, Bursting of a 5-foot 205
Banwell, Irving:
Formulas for Milling End Mills and Clutches..... 397
Bar Stock in the Gisholt Turret Lathe, Making Cross-Head Pins from 705
Barium Chloride Hardening Process 229
Barnes Drill Co.:
20-inch Upright Drill..... 645
Sliding Extension Gap Lathe 812
Barnes Co., W. F. & John:
Friction Drill Press with Combined Foot and Hand Feed 484
Barr's Rules for Powering Machine Tools 365
Battleship, Necessity of Weighing Every Part in Constructing a 695
Baush Mch. Tool Co.:
Vertical and Horizontal Multi-Spindle Drilling Machines for Structural Work 819
Bavaria, Utilization of Water Power for Electrification of Railways in 157
Bayley, I. G.:
A Draftsman's Tool Chest.. 102
Beam, Obituary of I. Willard 834
Beams, Influence of Variable Load on Iron 535
Bean, E. W.:
A Boring Mill Problem.... 175
Bearing for End-Tipping Slag Ladle, Unique 530
Bearing, Squeak of Dry..... 504
Bearings, Ball:
1 237
2 312

Bearings, Efficiency of Automobiles Increased by the Use of Anti-Friction..... 672
Bearings for Planer Platens. 891
Bearings, Hot. E. Kistinger. 141
Bearings, The Importance of Well-Lubricated 775
Becker-Brainard Milling Mch. Co.:
Universal Index and Spiral Head 50
Horizontal Milling Attachment for Vertical Miller. 644
Belt Coupling, Toscot Flexible Metallic 644
Belt Ever Manufactured, Largest Leather 145
Belt Shifter. C. Shaw..... 49
Belt Shifter, A. Chas. Roels. 549
Belt Shifter, German Type of. 695
Belt Tightener, A 610
Belt Tightener for Use with Crocker-Wheeler Motors, Counter-shaft 482
Belts and Chains for Power Transmissions, Tests to Ascertain Relative Efficiencies of 907
Belts and Leather, Investigating Adulterations in. J. M. Menegus 179
Belts, Apparatus for Measuring the Slip of. Moritz Kroll 627
Belts with One Lever, Shifting Two. William L. Ambler 47
Bench Centers, Wells 576
Bench Drawer, New Britain.. 899
Bench Drill, Excelsior Sensitive 183
Bench Miller with Column, Chicago 407
Bench Milling Machine, Sloan & Chace Precision.. 641
Bench Vise Anvil..... 112
Bending Large Steel Pipe by Heating with Oil Burner 613
Bending Tubing, Monnet & Moyne Machine for..... 609
Bends, Pipe. Wm. F. Fischer 702
Berlin's Appropriation for Motor Fire-Engine Outfit.. 698
Besly & Co., Chas. H.:
New Spiral Disk Grinder.. 187
No. 6 Heavy Spiral Disk Grinder 657
Bethlehem Steel Co.:
Steam Drop Hammer 490
Bethlehem Steel Works, Armor Plate Forging and Machining at the..... 501
Bevel Gear Cutting Attachment for Automatic Spur Gear Cutter 264
Bevel Gear Testing Device, German 377
Bevel Gears, To Obtain Face Angle of 477
Bevel Gears with a Rotary Cutter, Cutting. H. P. Fairfield 73
Bickford Universal Radial Drill 195
Bids for Vertical Triple-Expansion Crank-and-Fly-Wheel Pumping Engine.... 390
Bignall & Keeler Mfg. Co.:
Die-Chaser Grinding Machine 898
Bill's Garage. Ethan Viall.. 220
Billy Came to Use Twist Drills, How 610
Birdsboro Steel Fdry. & Mch. Co.:
Motor-Driven Cold Saw.... 907
Birmingham, Industries of... 234
Bitterlich, Walter J.:
Value of Cooperation..... 884
Blacksmith Shop, System for the. James Cran 865
Blacksmith's Drill Jig. A. J. F. Sallows 108
Blackwell's Island Bridge, Great Capacity of 614
Blanking and Forming Copper Cups, Punch and Die for.. 546
Blanking and Progressive Dies, Stop for Stock in. K. L. Ross 254
Blanking Die, A Swaging and. James J. Klein 715
Blast Furnace Gas Utilized for Power Purposes in Germany, Large Per Cent of.. 134
Bliss, E. W., Co.:
Bliss Double Crank Press.. 200
Bliss Single Crank Press of Unusual Size 266
Inclined Bliss Press with Double Die Attachment. 567
Automatic Gang Press..... 639
Press Fitted with Stagger Feed 729
Block, Babbitt Riveting. C. H. Ramsey 400
Block for Holding Taps and Tap Drills. F. Rattek.... 400
Blowers, Sturtevant Steam Turbine Driven Foundry.. 562
Blowing Unit, A 2,000 H. P. Gas Engine 581
Blue-print Cutting, Trimming and Sizing Table. Pease.. 123
Blue-print Frame, Novel.... 907
Blue-print Machine, Pease Automatic Electric 491
Blue-printing Machine, Duplex 828
Blue-prints, Machine for Drying 829
Blue-prints, Smoothing Wrinkled. Howard D. Yoder... 112
Boat, Highest Speed Attained by Torpedo 477
Boats, Reinforced Concrete.. 466
Bohler, Geo. William:
Draftsman's Portfolio 709
Boiler Capacity, Increasing the. Geo. P. Pearce..... 152
Bolt Holes, Tool for Spacing. 550
Booth, W. H.:
Safeguard in Machinery... 221
Borer:
Tools for Motor Car Cylinder Boring..... 45
Boring and Milling Machine, Hamilton No. 3 Horizontal Drilling 417
Boring and Turning Mill, Gisholt 265
Boring and Turning Mill, Large Horizontal 861
Boring and Turning Spacing Collars, Chas. Thiel 247
Boring Bar, A Handy. Arthur Nichols. 325
Boring Bar, Feed Motion Gear Train for..... 113
Boring Bars. Expansion. B. M. Weller 629
Boring, Drilling and Milling Machine, Fosdick 54
Boring, Drilling and Milling Machine, Lucas Horizontal 814
Boring, Drilling and Milling Machine, Lucas Horizontal. 898
Boring Driving Box Brasses. M. H. Westbrook..... 321
Boring Head, Improved Melvin Adjustable..... 575
Boring Head, Multiple Tool.. 192
Boring Lathe Spindles, Home-made Machine for. Ed. B. Eby 801
Boring Locomotive Rods. M. H. Westbrook 42
Boring Long Cast Iron Cylinders. M. B. Stauffer..... 715
Boring Machine, Newton Cylinder and Valve Chamber.. 896
Boring Mill, Improved Motor-Driven Car-Wheel 648
Boring Mill, Niles-Bement-Pond 30-inch Turning and. 818
Boring Mill Problem, A. E. W. Bean 175
Boring Mill, Turning a 76-inch Pulley on a 60-inch. R. C. Porter..... 244
Boring Tool, Forging a Lathe. J. F. Sallows..... 21
Boring Tool Holder, Chicago. 575
Boring, Tools for Motor Car Cylinder. Borer 45
Borrowing Tools 306
Boston Tool Co.:
New Threading Tool..... 745
Bow for *Sucric*, New..... 156
Bowen, E. W.:
Reclaiming Old Metal Brake-Beams 111
Bown Mch. Co., Ltd.:
Bown Drill Press Vise..... 339
Box Truck, A Good. Ethan Viall 396
Boy Learn a Trade in a School, Can a? E. R. Markham 505
Bracket, Vertical Camera. Ethan Viall 376
Bradford, John:
Indicator for Thread Cutting 109
Brake-Beams, Reclaiming Old Metal. E. W. Bowen..... 111
Brake Experiments, Vacuum 680
Brakes, Friction 871
Brandle, John:
Cut-off Tool for the Steam Hammer 707
Brass Finishers' Lathe, Springfield Motor-Driven... 576
Brass for Laying Out Work, To Copper 179
Brass for Marine Vessel Construction 6
Brass, Glass Used as a Flux in Melting 463
Brass, Matt Dip for. J. L. Lucas..... 551
Brass, Non-Corrosive 6
Brass Tubing, Green River Screw Plate for Brazed.... 483
Brasses, Boring Driving Box. M. H. Westbrook..... 321
Brasses, Lining Car..... 377
Brassler, Chas. A.:
A Great Public Clock..... 852
Brazing Cast Iron. Ethan Viall 179
Brazing Flux, New..... 232
Breakable Part as a Prevention for Overload, The..... 22
Breast Drill Made by the Lancaster Machine and Knife Works, Universal.... 826
Breath, W. L.:
Draftsman's Triangle..... 176
Brennan, Money Granted by Indian Government to Louis 308
Brick Made from Refuse of Sulphite Mills 748
Brick, Manufacture of Sand-Lime 699
Bridge, An Interesting Draw- 695
Bridge Disaster, Quebec..... 615
Bridge Failure, An Appalling 89
Bridge, Great Capacity of Blackwell's Island 614
Bridge, Longest in the World 25
Bridgeford Mch. Tool Wks.:
Geared Head Lathe..... 488
36-inch Geared Head Lathe 653
Bridgeport Safety Emery Wheel Co., Inc.:
Drop Apron Tool Grinder.. 416
Bridges in Germany, Plain Concrete for Railway..... 156
British File-Testing Machine. 210
British Machine Tools, Some. Jas. Vose 148
British Torpedo Boat Destroyer Fastest Vessel in World 380
Broaching Machine and Its Work, A Remarkable..... 813
Broaching Machine, Lapointe Spiral 656
Bronze, Silver White. R. P. Perry 179
Brown & Sharpe Mfg. Co.:
Universal Milling Machine Patent 18
No. 3 Vertical Milling Machine 180
Gear-Cutter Grinding Machine 559
Brown (Robert A.), Obituary of 126
Brown, Robert S.:
A Simple Flexible Coupling 325
"Buckeye" Die-Stock, Hart's. 570
Buffalo Fdry. & Mch. Co.:
Steam Hammer Adapted to Small Drop Forging Work 828
Buffalo Specialty Co.:
Tandem Hack-Saw of Original Design 828
Buffing Wheel, Triplex..... 898
Building in New York, Plans for the Highest..... 870
Building Shops for Growth... 696
Bullard Rapid Production Vertical Turret Lathe..... 119
Bunnell, S. H.:
Invisible Economies 25
Burglar and the Safe-Maker, The 83
Burglar and the Safe-Maker, The. Geo. P. Pearce..... 244
Burke Mchy. Co.:
Tapping Machine 116
Cutting-off Saw 728
Burnite, T. B.:
Right-Angle Power Head for Drilling and Reaming Holes 396
Burns, Picric Acid as a Remedy for 100
Burr & Sons, John T.:
Motor-Driven Cold Saw for Small Work 492
Burry, Obituary of John..... 580
Bursting Strength of Malleable Iron Pipe Fittings..... 455
Burton (C. W.), Griffiths & Co.:
Improved Square Hole Grinding Machine..... 121
Butler, J., & Co.:
An English High Speed Drill Press 333
Butz, W. H.:
Design of Light Structural Jib Cranes 211

Calculate the Side of an Inscribed Polygon, To. Robert Grimshaw 398
Calculator, A Simple..... 611
Calipering Taper Tapped Holes, Tool for..... 326
Cam Adjusting Device..... 544
Cam Applications. Geo. W. Armstrong 753
Cam, Cutting a Special. Allan 109
Cam-Cutting Machine for Textile Machinery 907
Cam-Cutting Machine, Manville 411
Camera Bracket, Vertical. Ethan Viall 376
Camera, Copying 745
Campbell, A. L.:
Removing Ink from Drawings 804
Campbell, Daniel T., Obituary of 344
Cams for Rapid Motions, Laying Out. F. H. Sibley. 374
Canal in France, Subterranean 90
Canal to Connect Baltic and Adriatic Seas 233
Canal to the Sea, Paris to Construct 26
Cannon for Dissociating a Shrink Fit 9
Cannon for Shop Use. H. K. Griggs 248
Cantelo, Walter:
Measuring Screw Thread Diameters 33
The Usefulness of Hydraulic Pressure..... 174
Cape Town to Cairo Railroad Near Completion 870
Capitalist, The Failure of the Small 231
Car Brasses, Lining..... 377
Car-Wheel Boring Mill, Improved Motor-Driven..... 648
Car Wheels, New Idea in.... 305
Carbureters, Turning and Threading Needle Points for. J. D. Coe..... 400
Card, Efficiency 548
Cardullo, Forrest E.:
Faults of Iron Castings.
1. 71
2. 135
Carnegie, F.:
The Effect of Distilled Water on the Life of Milling Cutters 708
Carpenter, Sidney C.:
Graphical Solution of the Cross-Roll Curve Problem 757
Carr Reversible Cutting-off Tool Holder 201
Cars on German Railways, Accumulator 90
Carstensen, F. R.:
Screw Slotting Fixture.... 43
Hob for Forging Dies..... 474
Case-hardening, Notes on.... 362
Case-hardening, Partial. E. S. Wheeler 551
Case-hardening, The Importance of Nitrogen in..... 157
Casein Cement 792
Cassier's Gas Power Number. 272
Cast Gears, Cleaning..... 377
Cat-Heads, A New Trick in. J. J. Voelcker..... 716
Cast Iron Beams, Strength of. 339
Cast Iron Brazing. Ethan Viall 179
Cast Iron, Comparative Test of Abrasive Disks on..... 880
Cast Iron Containing Nickel, Results of Tests Made with 26
Cast Iron Cylinders, Boring Long. M. B. Stauffer..... 715
Cast Iron, Effect of Titanium on Steel and..... 834
Cast Iron, Hardening..... 551
Cast Iron, New Flux for Brazing 232
Cast Iron, Physical Characteristics of 158
Cast Iron, Testing the Amount of Swelling of.... 534
Cast Iron, Tinning..... 86
Cast Iron with Zinc, Impregnating. M. B. Stauffer.... 179
Casting Metals Under Pressure 309
Casting, Method of Planing an Odd-Shaped. LeRoy K. Moulton 715
Casting Threaded Holes in Wrought Iron Nuts..... 586
Casting was Planed on a Small Planer, How a Large 301
Castings, Faults of Iron. Forrest E. Cardullo.
1. 71
2. 135
Castings, Turning Hard Bronze. W. L. McLaren.. 707
"Castolin" for Brazing Cast Iron 232
Catalogues and Other Printed Matter Sent to France Should be in French Language 454
Catalogues, Some Old Machinery 225
Cement and Concrete, Action of Sea Water on..... 90
Cement, Casein 792
Center for Turning Tapers, Cincinnati 486
Center Grinder and Frame for Portable Drill..... 649
Center Prick Punch, Trixie.. 173
Center Used when Facing the Ends of Work. R. H. Marsh 470
Centering, Notes on. Allan.. 107
Centering, Notes on. Plodder. 470
Centering Tool, Driving Axle. W. W. Williams..... 469
Centers, Ball Bearing Cone. F. R. Peirce..... 550
Centers, Facing Work on. Arthur Nichols 178
Centers, Facing Work on. Clarence E. Simonds..... 111
Centers, Facing Work on.... 470
Centers, Oiling. John McLeod 326
Centers, Wells Bench..... 576
Centers with High Speed Steel Points, Lathe. Foster F. Hillix 323
Centrifugal Air Compressors, G. E. 257
Centrifugal Pumps for Deep Well Pumping 92
Chain Belt and Adjustable Pulley for High Speed, Light, and Noiseless Service 745
Chain Block, Northern Electric 740
Chain Blocks, Climax..... 816
Chain, Schmidt Driving..... 260
Chain While Replacing Links, Device for Holding Roller. 657
Challenge High-Speed Power Hack-Saw 905
Chamberlain, Obituary of Frank H. 664A
Chambersburg Eng. Co.:
Line of Steam Drop Hammers 739
Chamfering Transmission Gear Teeth, Milling Machine Attachment for..... 489

Chandler Planer Co.:
Improvements in the Chandler Planer 261
Chandler Clutch-Driven Planer 329
Change Gears, Figuring Lathe 327
Change Gears for Milling Machine when Cutting Spirals 717
Change Gears, Machining. Racquet 546
Change Gears, Rack for. W. F. Groene 886
Changes on Drawings, Recording 397
Changing Drawings Quickly. Howard D. Yoder..... 106
Chapman Double Ball Bearing 116
Chasers for Internal Threading, Circular 614
Chasers, Grinding Threading Die. C. C. Cleverdon..... 171
Chasers, Threading 327
Check Nut, The Position of the. Geo. P. Pearce..... 107
Cheops Pyramid, Unit of Measurement Employed in Building the 879
Chicago Boring Tool Holder .575
Chicago Mch. Tool Co.:
Chicago Bench Miller with Column 407
Chicago's Tunnel System for Freight, Mails, etc..... 156
Chimney to Carry Off Fumes from Assay Furnaces, High 786
China, Demand for Machinery in 454
China's Possibilities as an Iron-Producing Country... 614
Chipping, Calking, etc., Advantages of Pneumatic Tools Over Hand Labor for 314
Choosing a Trade..... 378
Christman, A. B.:
Graduated Stop-Cock for Oil 49
Stock Support for Screw Machine 49
Chrome-Steel File, New..... 454
Chuck, A New Drill..... 783
Chuck, A Special Drill. W. Alton 890
Chuck Block, Spring. E. W. Norton 802
Chuck, Expanding. Tool Designer 254
Chuck for Drilling and Tapping, Murchey Revolving.. 561
Chuck for Straight Shank Drills, Grip 91
Chuck, French Self-Tightening and Quick-Releasing Drill 700
Chuck, Method of Making Screw for Drill. B. M. Weller 713
Chuck, Planer. L. N. Gillis.. 545
Chuck, Quick-Action Adjustable Collet 186
Chuck, Skinner Geared Pattern Drill 645
Chucking Lathe, Wells..... 193
Chucking Machine, Potter & Johnston 6-inch 809
Chucking Machine, The Potter & Johnston Long-Travel 571
Chucking Machine, The Setting Up and Operation of the Potter & Johnston Automatic.
1. 555
2. 605
Chucks Made by Whitman & Barnes, New Types of Drills and 568
Chucks, Spring. H. A. S. Howarth 107
Chucks, Two-Jawed Lathe. Ethan Viall 625
Cincinnati Ball Crank Co.:
Quick-Action Ball Crank... 566
Cincinnati Center for Turning Tapers 486
Cincinnati Mch. Tool Co.:
Permanent Tap Sockets.... 643
Cincinnati Milling Mch. Co.:
Testing the Dividing Head of the Cincinnati Milling Machine 315
Cincinnati Shaper Co.:
Open Side Shaper..... 55
Automatic Gear-Cutting Machine 638
Cincinnati's Condition of General Prosperity During 1906 152
Circle Around a Drilled Hole, Describing a. Donald A. Hampson 400
Circular Chasers for Internal Threading 614
Circular Formed Tool-holder, Improved. Frank G. Sterling 324
Circular Forming Tools, Formulas for 295
Clamp, Thompson Patent.... 118
Clamp, Williams Drop-Forged Planer 264
Clamping Appliances for the Planer 804
Clarke (Henry W.), Obituary of 64
Cleaning Cast Gears..... 377
Clearance Holes in Solid Dies, Drilling. M. Schilling.... 177
Cleveland Specialty & Mfg. Co.:
Adjustable Drill Jig..... 813
Cleveland Twist Drill Co.:
Drill Speed and Feed and Decimal Equivalent Indicator 121
Cleverdon, C. C.:
Grinding Threading Die Chasers 171
Climax Hoist Co.:
Chain Blocks 816
Clock, A Great Public. Chas. A. Brassler 852
Clock with Reversed Face.... 86
Clutch Coupling, New Form of Grip-Jaw 87
Clutch, Design of Steel Plate Friction 327
Clutch-Driven Planer, Chandler 329
Clutch, The Hele-Shaw..... 650
Clutches 872
Clutches, Formulas for Milling End Mills and. Irving Banwell 397
Coal Consumption of Germany, Increase in..... 786
Coal Gas Made Odorless Without Becoming Non-Explosive 277
Coal Mining in United States, Lack of Safety Appliances in 787
Coal, United States' Consumption of 871
Coaling, Championship Record for Rapid..... 796
Coal Under Water, Storing... 535
Coapman, John:
Steel Rule Recessed into T-Square Blade 716
Cochrane-Bly Metal Sawing Machine 187
Coe, J. D.:
Turning and Threading Needle Points for Carburetors 400
CO_2 Engine, The Marvelous. Henry Hess 322
Coffield Water Motor..... 575
Cold-Metal Saw, Lea Motor-Driven 909
Coils wih Bare Wire, System of Winding Magnet..... 455
Cold-Rolled Shafting, Convenient Rule for Calculating 876
Cold-rolled Steel Pieces, Die for Bending. Engineer... 472
Cold Saw Cutting-off Machine, Newton Combination 269
Cold Saw Cutting-off Machine, Newton Double..... 121
Cold Saw for Small Work, Burr Motor-driven 492
Coles, Geo. T.:
Reducing the Diameter of Tool Steel under the Steam Hammer 319
Hardening Spring Collets. 471
The Gaging of Heats for Hardening 549
Collapsing of Hardened Tools, The. J. F. Sallows..... 325
Collars, Boring and Turning Spacing. Chas. Thiel 247
Collars, Interchangeable Jigs for Drilling..... 46
College and Apprentice Training 137
Collet with Draw-in Attachment 408
Collets, Making Spring. J. J. Voelcker 246
Collets, Hardening Spring. Geo. T. Coles 471
Commutator Truing Device.. 57
Comparisons, Absurd 170
Competition, Foreign Machine Tool 696
Competitor, Best Way to get Along with a 539
Compound Table for Upright Drill Press 817
Compressed Air Engines, New Method of Working Internal Combustion 523
Compressed Air, Loss in the Transmission of 12
Compressed Air vs. Electrical Tools 533
Compressive Riveters, Some Late Improvements in.... 94
Compressors, G. E. Centrifugal Air 257
Compressors, High Pressure Turbo. Alfred Gradenwitz. 351
Con Wise:
Shop Elevators and Other Things 476
Concave Mill, Selecting Cutter for. H. K. Harring... 708
Concave Mill, Selecting Cutter for Fluting 477
Concave Tapers, Fixture for Planing. J. F. A. Voet... 48
Concave Work in the Lathe, Facing. W. J. Sansom.... 473
Concrete, Action of Sea Water on 379
Concrete as a Protection for War Vessels, Reinforced.. 534
Concrete Beams as a Substitute for Wood in Mining Construction, Reinforced.. 786
Concrete Boats, Reinforced.. 466
Concrete Building Construction, Careful Designing Necessary for 306
Concrete, Fly-wheels with Rims of Reinforced..... 613
Concrete for Railway Bridges in Germany, Plain..... 156
Concrete Foundation for Boring Mill 221
Concrete Foundations for Drop Hammers 542
Concrete Oil Tank 867
Concrete, Preservation of Steel Imbedded in..... 870
Concrete Telephone and Telegraph Poles 26
Concrete, Test of Reinforced. 534
Concrete, Waterproofing 201
Cone Centers, Ball Bearing. F. R. Peirce..... 550
Cone Pulleys, Special Lathe and Tool Equipment for Turning. Wm. F. Groene. 464
Confidences of a Manufacturer, The 150
Confidences of a Workman, The. Mars 628
Conkling Co.:
Reversing Device 900
Connecticut, Speed Trials of the 90
Connecting-rod Brasses, Tightening Device for..... 611
Connections for High Pressures 134
Conservation of Natural Resources 664
Conserving National Resources, Work of the U. S. Geological Survey in..... 911
Constants for Finding Speeds of Drills. Peter Plantinga 473
Contour Gage. H. D. Yoder. 253
Conveyor, Problems of the Spiral, F. Webster..... 504
Cooperation, Value of. Walter J. Bitterlich..... 884
Cooperative Courses in Engineering at the University of Cincinnati 97
Copper Brass for Laying out Work, To 179
Copper Cups, Punch and Die for Blanking and Forming 546
Copper, Lubricant for Turning. S. H. Sweet 179
Copper on its Surface, Hardening 282
Copper Tubes, A New Method of Manufacturing 308
Corbin-Church Co.:
Single and Multiple Spindle Drill 829
Cork as a Brake, Value of... 232
"Cork Legs" a Misnomer.... 317
Corliss Engines, Limit of Superheating for 454
Cornes, C. H.:
Reading the Slide Rule Accurately 885
Correction, A 376
Correction to Description of Planer Clamp 339
Cost of Selling Goods..... 70
Cost System for Small Shops, Simple. Chas. Roels 631
Counter, Vest Pocket 907
Counter-shaft Belt Tightener for Use with Crocker-Wheeler Motors 482
Counter-shaft, One-Belt Reversible 265
Coupling, A Simple Flexible. Robert S. Brown 325
Coupling, Dallett Automatic Hose 60
Coupling, Haeberlin Friction. 531
Coupling, Hendershot Shaft. 416
Coupling, New Form of Grip-Jaw Clutch 87
Coupling, Nuttall Flexible Insulated 735
Coupling of Simple Design, Friction 783
Coupling, Toscot Flexible Metallic Belt 644
Cox, William, Obituary of.... 344
Cracking of Aluminum Castings, Cause of 308
Cran, James:
Reasons Why so Little is Heard from Forge Shops 709
System for the Blacksmith Shop 865
Crane Co.'s Novel Pipe Nipple Machine 507
Crane Design, History of... 701
Crane Sixteen-Spindle Drill. 144
Crane Trolleys, Formulas for Force Required to Move. John S. Myers.... 99
Cranes and Hoists, Power Required for. Ulrich Peters 161
Cranes, Design of Light Structural Jib. W. H. Butz 211
Cranes, Jib 634
Crank-Shafts, Electric Welding Advantageous in Making Multiple-throw Automobile 759
Crank-shafts, Formulas for Gas Engine 309
Crank Shaper, Rhodes 12-inch Back-geared 563
Crank Shaper, Walcott & Wood 20-inch 822
Cream Separator Bowl Balancing, Yankee 16
Credit for Inventions, Obtaining 774
Cresson (Geo. V.), Obituary of 421
Crocker-Wheeler Co.:
Counter-shaft Belt Tightener for Use with Crocker-Wheeler Motors 482
Cross, K. R.:
Method of Drilling Curved Holes 249
Cross-feed for Gould & Eberhardt Shapers, Front.... 483
Cross-head Pins from Bar Stock in the Gisholt Turret Lathe, Making..... 705
Cross-head, Turning the Wrist-pin of a. W. L. McLaren 251
Cross-roll Curve, Derivation of the. Ulrich Peters.... 214
Cross-roll Curve Problem, Graphical Solution of the. Sidney C. Carpenter..... 757
Crowning Attachment for Lathes, Mossberg Pulley... 485
Crude Oil, Preservation of Ties by 308
Cruiser, Launching of Japanese 380
Cruiser, Results of Trials of New Turbine German 373
Crystallization of Steel, The. 310
Curling Dies, Two. J. F. A. Vogt 172
Currents Retard Construction of Light-house, Swift.. 391
Currier Reaming Machine... 334
Curtis, Obituary of Geo. P.. 580
Curve, Derivation of the Cross-Roll. Ulrich Peters 214
Curved Holes, Method of Drilling. K. R. Cross.... 249
Cut-off Tool for the Steam Hammer. John Brandle.. 707
Cutler-Hammer Lifting Magnet 51
Cutter and Tool Grinder, LeBlond Universal 724
Cutter for Concave Mill, Selecting. H. K. Harring... 708
Cutter for Fluting Concave Mill, Selecting 477
Cutter for Spiral Gears, To Find the Number of. E. G. Eberhardt 43
Cutter, Gould & Eberhardt Stocking 810
Cutter Number for Spiral Gears, Derivation of Formula for Determining Spur Gear. H. W. Henes..... 540
Cutter, Pneumatic Tube and Pipe 30
Cutters, Inexpensive Tools with Inserted High-speed. Charles Thiel 48
Cutting and Edging Die, A Combination. J. F. A. Vogt 177
Cutting Fiber 49
Cutting-off Machine, Gorton. 492
Cutting-off Machine, Newton Combination Cold Saw.... 269
Cutting-off Machine, Newton Double Cold Saw 121
Cutting-off Saw, Burke Machinery Co.'s 728
Cutting Off Steel Shafts. John McLeod 715
Cutting-off Tool Holder, Carr Reversible 201
Cutting Tool in Proportion to the Working Pressure, Device for Adjusting the Feed of a Rotating 531
Cylinder Boring, Tools for Motor Car. Borer 45
Cylinder Grinder, Automatic. 332
Cylinder Grinding Attachment for Thompson Grinding Machine 566
Cylinder of a Marine Engine, Scraping out the 22
Cylinders, Boring Long Cast Iron. M. B. Stauffer 715
Cylinders, New Departure in the Design of Hydraulic Press 699

Dale, Obituary of Charles H. 912
Dalin Miller, No. 1..... 53
Dallett Automatic Hose Coupling 60
D'Amour Sensitive Drill Press 411
Daniels, Obituary of George H. 912
Data and Shop Operation Sheets, The Extra 88
Data Sheet Index Issued, Complete 508
Data Sheets Give Horse-Power Transmitted by Cast Iron and Raw-Hide Pinions for 1-inch Width Face Only, January, 1908 390
Data Sheets, File for MACHINERY. Samuel G. Aroson 884
Davis Turret Lathe for Boring, Forming, and Turning 189
Dawes, Mitchell:
How to Obtain Approximate Fractions by the Method of Continued Fractions 877
Dayton Power Hammer..... 647
De La Vergne Two-Cycle Vertical Oil Engine 115
Dean, A. D.:
Education for Industrial Workers 6

Decimal Equivalent Indicator, Drill Speed and Feed and 121
Defects in Threads for Steam-Tight Joints 504
Degen, Julius: Ellipsograph 258
DeLeeuw, A. L.: Self-oiling Machinery 886
DeLille, A. J.: Tool-makers' Drill Pad.... 804
Laps and Lapping..... 888
Delmouly, Obituary of Eloi.. 751
Demming, Roy B.: Removing the Fins from the Pins of Spanner Wrenches 395
Demonstrating an Invention. M. E. Canek 168
Denatured Alcohol in Germany, Production of..... 553
Denatured Alcohol, Production and Use of..... 379
Denatured Alcohol, Production of 454
Describing a Circle Around a Drilled Hole. Donald A. Hampson 400
Design, Simplicity in Machine Tool. W. T. Sears..... 869
Design, Unit System of Machine 154
Design of Rotating Drums. Ulrich Peters 275
Designing of Machine Frames, The. E. A. Fessenden.... 840
Detroit River Tunnel, Construction of the 166
Dial Gages for Accurate Measurements 264
Dial Measuring Wheel, Jones 562
Diameter of Tool Steel under the Steam Hammer, Reducing the. Geo. T. Coles 319
Diamond Chain & Mfg. Co.: Device for Holding Roller Chain while Replacing Links 657
Diamond Saw & Stamping Works: Sterling Motor-driven Hack Saw Machine 55
Diamond, The Hardness of a. 508
Dickinson, R. W.: Improved Draftsman's Triangle 798
Die, A Combination Cutting and Edging. J. F. A. Vogt. 177
Die, A Swaging and Blanking. James J. Klein..... 715
Die-chaser Grinding Machine, Bignall & Keeler 898
Die Chasers, Grinding Threading. C. C. Cleverdon.... 171
Die for Bending Cold Rolled Steel Pieces, Engineer ... 472
Die, Sectional Sub-press. L. A. Dorman 105
Die-sinking and Engraving Machines 615
Die Stock, Hart's "Buckeye". 570
Die Stock, Hoefer Pipe Threading 192
Dies, Drilling Clearance Holes in Solid. M. Schilling.... 177
Dies, Grinding Threading... 249
Dies, Hob for Forging. F. R. Carstensen 474
Dies to Prevent Breakage in Hardening, Construction of. K. L. Ross..... 42
Dies, Tempering Drop Forging. J. F. Sallows..... 320
Dies, Two Curling. J. F. A. Vogt 172
Differential Drive 305
Differential Speed Indicator. 787
Dill, T. C., Mch. Co.: Right-angle Drive for Dill Slotter 338
Dimensions of Tools, Tabulating. Tool Designer.... 247
Disk Grinder, Besly No. 6 Heavy Spiral..... 657
Disk Grinder, Combination Double and Single 338
Disk Grinder ever Built, Largest 113
Disk Grinder, Gardner Combination 902
Disks, Punch and Die for Armature 41
Dissolve Glass, To. S. W. Green 551
Distilled Water as Lubricant, Life of Milling Cutters Increased by Use of..... 454
Distilled Water on Life of Milling Cutters, The Effect of. F. Carnegie..... 708
Dividends and Foul Air..... 532
Dividing Head for Use with the Lathe 451
Dividing Head of the Cincinnati Milling Machine, Testing 315
Dividing Head, Universal.... 811
Dividing, The Use of the Ordinary Rule for. Martin Joachimson 804
Diving Apparatus, Ingenious. 796
Dolly, Pneumatic. M. H. Westbrook 324
Don'ts as a Spiritual Force, The Machine Shop 225
Don'ts for Machinists. W. H. Addis 444
Dorman, L. A.: Sectional Sub-press Die.... 105
Double Track on Trans-Siberian Railroad, Russian Government to Construct..... 26
Dow, Carl S.: Shop Photography 215
Down-feed for Stockbridge Shaper 193
Drafting Apprenticeship Course, A 39
Drafting as Productive Labor 868
Drafting-board, Handy Tools for the. Martin Joachimson 716
Drafting Kink, A Time-saving. F. L. Engel 400
Drafting-rooms, Lighting of. 306
Drafting-rooms, The Lighting of 801
Draftsman, A: Substitute for Thumb Tacks 254
Draftsman, The Status of the 89
Draftsman's Portfolio. Geo. William Bohler 709
Draftsman's Section Liner. C. A. Kelley 178
"Draftsman's Tool Chest," Error in Article 314
Draftsman's Tool Chest. I. G. Bayley 102
Draftsman's Triangle. W. L. Breath 176
Draftsman's Triangle, Improved. R. W. Dickinson.. 798
Draftsmen, General Electric Co.'s Apprenticeship System for Training..... 85
Draw-bridge, An Interesting.. 695
Draw-in Attachment, Adjustable Collet with 408
Drawer for Drawings. John B. Sperry 804
Drawer, New Britain Bench. 899
Drawing Press of Unusual Size, Toledo Toggle Action. 487
Drawing, Raising Draftsman's Protractor above the Surface of the. M. R. Kavanagh 326
Drawing-room Methods, Standard. M. R. Kavanagh... 368
Drawing, Sheet Metal. Frank E. Shailor 882
Drawings, Drawer for. John B. Sperry 804
Drawings, Maps, etc., An Interesting Method of Reproducing 608
Drawings, Patching 85
Drawings, Photographing.... 70
Drawings Quickly, Changing. Howard D. Yoder..... 106
Drawings, Recording Changes on 397
Drawings, Removing Ink from. A. L. Campbell.... 804
Drawings, Shading. H. D. Penney 471
Drift, Automatic Drill 828
Drill, American Tool Works 2-foot Radial 827
Drill, Armstrong Short Ratchet 740
Drill, Barnes 20-inch Upright 645
Drill, Center Grinder and Frame for Portable..... 649
Drill Chuck, A New..... 783
Drill Chuck, A Special. W. Alton 890
Drill Chuck, French Self-tightening and Quick-releasing 700
Drill Chuck, Method of Making Screw for. B. M. Weller 713
Drill Chuck, Skinner Geared -Pattern 645
Drill, Crane Sixteen-spindle.. 144
Drill Drift, Automatic..... 828
Drill, Excelsior Sensitive Bench 183
Drill, Four-spindle Locomotive Frame 829
Drill, Gardam Adjustable Multiple Spindle 650
Drill, Hilbert 2½-foot Radial 186
Drill Jig, B. M. Weller.... 547
Drill Jig, A Blacksmith's, J. F. Sallows..... 108
Drill Jig, Adjustable 813
Drill made by the Lancaster Machine & Knife Works, Universal Breast 826
Drill Manufacture, Special Machines and Tools Used in Upright 769
Drill Pad, Tool-makers'. A. J. De Lille..... 804
Drill, Portable Electric Radial 335
Drill, Portable Electric Radial 903
Drill Press, An English High-Speed 333
Drill Press, Automatic Stop for. S. Oliver..... 175
Drill Press, Compound Table for Upright 817
Drill Press, D'Amour Sensitive 411
Drill Press, Droop and Rein High-Speed 492
Drill Press, Foote-Burt High Duty 565
Drill Press, Lapointe Double. 659
Drill Press, Lathe Work on a. M. H. Westbrook..... 474
Drill Press, Milling Square Threads and Turning Pulleys on a..... 774
Drill Press, Motor-Driven Variable Speed Sensitive... 649
Drill Press of Novel Design.. 334
Drill Press of Novel Design, Friction Driven Sensitive.. 569
Drill Press Vise, The Bown.. 339
Drill Press with Combined Foot and Hand Feed, Barnes Friction 484
Drill Press with Provision for Changing Spindle Speed by Means of Lever for Feeding the Drill, Sensitive.... 829
Drill, Rockford Machine and Shuttle Co.'s Sensitive.... 744
Drill, Rockford Sensitive Bench 257
Drill, Simple Portable..... 633
Drill, Single and Multiple Spindle 829
Drill Socket, Cleveland Double Tang 642
Drill Speed and Feed and Decimal Equivalent Indicator 121
Drill, The Bickford Universal Radial 195
Drill, Western High Speed Multiple Spindle 187
Drill with the Axes of the Drill Spindles Arranged Radially, Multi-Spindle.... 153
Drilling, An Example of High Speed 707
Drilling and Milling Machine, Fosdick Boring 54
Drilling and Milling Machine, Lucas Horizontal Boring.. 814
Drilling and Milling Machine, Lucas Horizontal Boring.. 898
Drilling and Reaming Holes, Right-Angle Power Head for. T. B. Burnite..... 396
Drilling and Reaming in the Lathe. H. J. Bachmann.. 467
Drilling and Tapping, Murchey Revolving Chuck for.. 561
Drilling Attachment, Automatic Feed-Plate 466
Drilling Attachment for the Lathe, Deep 117
Drilling, Best Record in High-Speed 698
Drilling, Boring, and Milling Machine, Hamilton No. 3 Horizontal 417
Drilling Clearance Holes in Solid Dies. M. Schilling.. 177
Drilling Curved Holes, Method of. K. R. Cross..... 249
Drilling Deep Holes..... 634
Drilling Device, Multiple Spindle 252
Drilling Fixture for Offset Rod, Milling and. Pedro.. 797
Drilling Machine and Grinding Machine, Holroyd..... 485
Drilling Machine, Andrew Improved Multiple 574
Drilling Machine, Andrew Multiple 193
Drilling Machines for Structural Work, Baush Vertical and Horizontal Multi-Spindle 819
Drilling Machine, Hilbert Triple-Geared Upright..... 565
Drilling Machine, National Automatic Five-Way 658
Drilling Machine, New Sensitive Radial 732
Drilling Machines, Advanced Designs of German. Oskar Kylin 687
Drilling, Method of Accurate. Y. Ziegler 885
Drilling Square or Irregularly Shaped Holes, Device for.. 867
Drilling Table, Hilbert Universal 418
Drills, Constants for Finding Speeds of. Peter Plantinga 473
Drills, Grip Chuck for Straight Shank 91
Drills and Chucks Made by Whitman & Barnes, New Types of 568
Drill's Variety of Uses, Steam Rock 148
Drive, Differential 305
Drive for Dill Slotter, Right-Angle 338
Drive for Machine Tools, Rope 92
Driving Box Brasses, Boring. M. H. Westbrook..... 321
Driving Chain, Schmidt..... 260
Driving Plate for the Milling Machine, Improved. Ethan Viall 797
Driving Threaded Studs in a Lathe Without Marring the Threads. D. A. Hampson.. 325
Driving-Wheel Lathe, Sellers' High-Power 733
Droop & Rein: High-Speed Drill Press.... 492
Drop and Stamped Forgings. Joseph Horner 600
Drop Apron Tool Grinder, Bridgeport 416
Drop Face Flanged Loose Pulley 24
Drop-Forged Planer Clamp, Williams' 264
Drop Forging Dies, Tempering. J. F. Sallows..... 320
Drop Forging, Small Amount of Literature on..... 317
Drop Hammer, Bethlehem Steam 490
Drop Hammers, Chambersburg Line of Steam..... 739
Drop-Hammer Foundations.. 879
Drop Hammers, Concrete Foundations for 542
Drop Hammers, The Development of Steam..... 803
Drum, Fitting Trunnions to a Large. J. T. Grimshaw... 710
Drums, Design of Rotating. Ulrich Peters 275
Drums, Electroplating in Quantities in 460
Dry Bearing, Squeak of..... 504
Dumb-Bell Patch, A. Donald A. Hampson 716
Duncan (F. B.), Obituary of. 205
Dust Exhauster for Walker Surface Grinder 901
Dutch Trading House and its Head, A Well-Known..... 664
Duty on Advertising Matter Entering Australia 272
Dynamic Balancing 24
Dynamo Engine on a Revenue Cutter, Repairs to a..... 23
Dynamos, Pole Piece Design for. E. A. Löf..... 586
Dynamometer, Absorption.... 94
Dynamometer, The A. C. A. Automobile 461

Eastman Kodak Co.: Copying Camera 745
Eberhardt, E. G.: To Find the Number of Cutter for Spiral Gears. 43
Eberhardt Bros. Mch. Co.: No. 3 Automatic Gear Cutter 414
Small Automatic Gear-Cutting Machine 637
Automatic Worm-Wheel Hobbing Machine 907
Eby, Ed. B.: Home-Made Machine for Boring Lathe Spindles... 801
Ecker, William: The Tool-Room Versus the Machine Shop Shaper.... 782
Eclipse Mch. Co.: Power Hack-Saw 826
Economical Limit of Increased Production, The... 868
Economy, An Example of Misplaced. T. O. Olmaker. 474
Economy, Misplaced 88
Economy of Non-Productive Labor 533
Economy Tests of 7,500 K.W. Westinghouse - Parsons Steam Turbine 137
Economy Without Discretion. Pennsylvania 41
Economies, Invisible. S. H. Bunnell 25
Economy of High Speed Planers 700
Edgar, John: Hobs for Worm Gears..... 37
Obtaining Angular Movements with the Index Head 47
Tumbler Gear Design..... 207
Milling Operations on Vise Parts 302
Doubling the Capacity of the Milling Machine..... 319
Edge Grinder, Springfield Automatic Ring Wheel.... 643
Edgemont Mch. Co.: Wet Tool Grinder..... 646
Educational System, Limitation of Our Present..... 829
Educator, Experience a Practical 808
Education for Industrial Workers, A. D. Dean..... 6
Education for Machinists, Technical. F. Walsleben.. 630
Efficiency Card 548
Elastic Limit and the Testing of Materials, The. H. Gansslen 296
Elbows in Stove Piping, Machine for Forming Ribbed.. 267
Electric Chain Block, Northern 740
Electric Drive Installations, Ratio of Generator Capacity to Motor Horse-power in 158
Electric Flat-Irons, Novel Use of 377
Electric Generating Plants, Gasoline 183
Electric Generators to be Used in Heating Rooms, Surplus Heat from..... 613
Electric Heating, An Idea in. 787
Electric Hoist, Shepard..... 336
Electric Power and Light Installations, Estimated Life of 91
Electric Pumps for High-Pressure Fire Mains..... 454
Electric Radial Drill, Portable 335
Electric Railroads, Experiments to Determine Best Method of Operating..... 454

Electric Railways in U. S. at the End of 1906..... 301
Electric Soldering 228
Electric Traction on Swedish State Railways, Results of Tests of 786
Electric Transmission of Photographs 614
Electric Triplex Hoist, Yale & Towne 735
Electric vs. Hydraulic Elevators 232
Electric Welding Advantageous in Making Multiple-Throw Automobile Crankshafts 759
Electric Welding of Dissimilar Metals 806
Electric Welding, Some Examples of 553
Electrical Power to Drive all the Machinery in Steel Mills 27
Electrical Tools, Compressed Air vs. 533
Electricity Generated from Water Power in Switzerland 98
Electricity, Successful Transmission of Photographs by. 90
Electricity, Testing Wind Mills for Best Means of Generating 540
Electricity Used per Capita in the United States..... 210
Electrification of San Francisco Suburban Railways.. 156
Electrification of Swedish State Railways, Preliminary Work Begun on..... 613
Electrification of the Swedish State Railways 455
Electromagnet, Time in which Magnetism Escapes After Breaking Circuit 26
Electric Propulsion System, German Ships to be Equipped with Siemens-Schuchardt 454
Electric Welding Products Co.:
Electric Welding of Dissimilar Metals 806
Electromagnets for Lifting Glass 156
Electroplating in Quantities in Drums 460
Electrotypes Abroad, On Sending. Robert Grimshaw 707
Elevators and Other Things, Shop. Con Wise..... 476
Elevators, Electric vs. Hydraulic 232
Elevators for Tall Buildings, Scheme for Arrangement of 381
Elevators, High-Speed 235
Ellipsograph, Degen's 257
Emerson, C. F.:
The Use and Abuse of the Hack-Saw 712
Emery Grinding Wheels, Tests of 234
Employers' Liability Bill, New 587
Employers, Liability of..... 155
Employers, Liability of..... 231
End Measure Rods, Grinding Fixture for. G. R. Richards 884
End Mills and Clutches, Formulas for Milling. Irving Banwell 397
Engel, F. L.:
A Time-Saving Drafting Kink 400
Engine Designers, A Practical Problem for 694
Engine Generator Sets, Sturtevant Vertical Compound. 736
Engine Lathe, Improved Miami Valley 13½-inch... 489
Engine Lathe, Multiple Thread Cutting on the. R. H. Mitchell 326
Engine Lathe, Tools for Winding Springs in an..... 248
Engineer:
Die for Bending Cold-Rolled Steel Pieces 473
Engineering at the University of Cincinnati, Cooperative Courses in..... 97
Engineering Library to Open Evenings, Free 272
Engineers' Club Building, Opening of the New..... 420
Engineers Taught to Give Honest Work for Their Money 839
Engineer's Training Tends to Develop Honesty 881
England's First Skyscraper... 786
English Design, A Large Planer of 861
English Design, Hydraulic Valve of..... 451
Engraving Machines, Die-Sinking and 615
Entropy:
The "Money-Back" System. 110
Fair Wages 176
Epicyclic Gears 634
Equalizer, Truck 552
Erasures are not Noticeable, To Make Sketches so that.. 864
Erie Stamping and Mfg. Co.:
Thompson Patent Clamp... 118
Error in Article—"A Draftsman's Tool Chest"..... 314
Essential and the Unessential 532
Eugene Iron Wks.:
An Oregon Lathe..... 686
Europe, An American Mechanic in. Oskar Kylin.
1 577
2 660
3 746
4 829
5 908
Europe, Industrial Notes from. Jas. Vose.
61, 123, 202, 270, 340
419, 495
Ewart, Obituary of William Dana 751
Excelsior Sensitive Bench Drill 183
Exhibition, Notes from the Olympia. James Vose..... 222
Exhibition, Toulouse International Industrial 534
Exhibitions Over-done, International 232
Expanding Chuck. Tool Designer 254
Expansion Boring-Bars. B. M. Weller 629
Experience a Practical Educator 808
Experience, Mathematics and Practical 697
"Exploded View," Meaning of the Term 36
Explosives, New Method for the Ignition of..... 786
Exports, German Manufacturers Helped Only by Reduced Freight Rates on. Fairplay 471
Exposition at Rome and Turin, International 613
Exposition, German Manufacturers not to Take Part in Toulouse 613
Exposition of Safety Devices. 662
Exposition, Turin International 308
Extension Arms for Planing Wide Work. W. S. Leonard 887
Extractor for Chips, Steam Turbine Driven Oil..... 730

Face Angle of Bevel Gears, To Obtain 477
Face-Plate Work, Small Accurate. Walter Gribben..... 883
Facing Concave Work in the Lathe. W. J. Sansom..... 473
Facing Machine for Locomotive Frame Pedestals, Underwood Portable 563
Facing the Ends of Work, Center Used When. R. H. Marsh 470
Facing Work Between Centers 251
Facing Work on Centers. Arthur Nichols 178
Facing Work on Centers. Clarence E. Simonds..... 111
Fagerstrom, Hjalmar:
Using a Slide Rule for Obtaining Any Root of Numbers 866
Failure of the Small Capitalist, The 231
Fairfield, H. P.:
Cutting Bevel Gears with a Rotary Cutter 73
New Shop of J. E. Snyder & Son 243
Fairplay:
German Manufacturers Helped Only by Reduced Freight Rates on Exports 471
Falkenrath, E.:
Fuel Oil Storage System... 714
Fan, Sturtevant High-Speed Large-Volume 415
Fans and Heaters, Calculations of. Chas. L. Hubbard 703
Farrar, W. A.:
Radius Micrometer 56
Farwell Automatic Spur Gear Hobbing Machine 727
Fast Ocean Liners, Income from 444
Faults of Iron Castings. F. E. Cardullo.
1 71
2 135
Fay Mch. Tool Co.:
Cam-Cutting Machine for Textile Machinery 907
Feed Motion Gear Train for Boring Bar 113
Feed of a Rotating Cutting Tool in Proportion to the Working Pressure, Device for Adjusting 531
Feed on a Vertical Milling Machine, Combined Automatic Vertical and Horizontal 382
Feed-Plate Drilling Attachment, Automatic 466
Feed Rolls, Woodward & Powell Planer for Fluting.. 652
Feed Water, Heating of Locomotive 428
Ferracute Mch. Co.:
Ferracute Press for Heavy Cutting 189
Ferrucate Single-Crank Press 331
Foot Press for Cutting Paper Blanks 828
Ferry Between Sweden and Germany, Railway 380
Ferry Connection Between Sweden and Germany, Bill Passed for 600
Fessenden, E. A.:
The Designing of Machine Frames 840
Fiber, Cutting 49
Fiber Wedge for Securing Hammer to its Shaft. D. A. Hampson 804
Field-Morris System for Increasing the Thermo-Dynamic Efficiency of the Steam Engine, Results of the Trials of the..... 90
File for Machinery's Data Sheets. Samuel G. Aroson. 884
File, How to Handle a. W. A. Knight 863
File, New Chrome Steel.... 454
File-testing Machine, British 210
File Testing, Results of Mechanical 230
Files, An Interesting Method of Sharpening 534
Files, Examining and Testing. Oscar E. Perrigo 77
Files in America, Making Swiss:
1 9
2 80
Files Should be Annealed, Tools Made from 474
Filing Machine, A Handy. Ethan Viall 883
Filing Machine, Hardinge... 199
Fillets, Device for Making Wax. M. R. Kavanagh... 249
Fillets, Device for Making Wax. W. H. Knowles.... 713
Fillets to Patterns, Applying Leather. J. W. Wolfenden 633
Fillets, Tool for Shaping Wax. Pattern-Maker 49
Filling and Painting Machine Tools. H. J. Huddleston.. 507
Fines Imposed on Railroads for Late Delivery of Mails. 308
Fining Employers, Killing Men and. Robert Grimshaw 472
Finish on Machinery, Fine... 453
Finished Surfaces, Indicating 397
Fins from the Pins of Spanner Wrenches, Removing. Roy B. Demming 395
Fire-engine Outfit, Berlin's Appropriation for Motor.. 698
Fire-engine and Horse-Drawn Engines, Comparative Cost of 26
Fireproofing Wood and Cloth. 290
Fischer Mch. Co.:
Oil Grooving Machine.... 196
Installation of Wood Turning Lathes 268
Fischer, Wm. F.:
Pipe Bends 702
Fish, A. E.:
Saving a Hack Saw Blade. 254
Fitchburg Machine Wks.:
New Design of the Lo-Swing Lathe 53
Fixtures, Jigs and. Einar Morin:
1 517
2 621
3 689
4 775
5 857
Flanders, Ralph E.:
The Variation of the Strength of Gear Teeth with the Velocity 279
Gear-cutting Machinery:
1 283
2 355
3 429
4 509
5 589
6 673
7 761
8 845
Launching a Great Lakes Freighter 837
Flanged Loose Pulley, The Drop Face 24
Flat-irons, Novel Use of Electric 377
Flather, E. J., Mfg. Co.:
Bevel Gear Cutting Attachment for Automatic Spur Gear Cutter 264
Flather (Mark) Planer Co.:
Sixteen-inch Gear-driven Shaper 199
Fleming Co., G. W.:
Sensitive Drill Press with Provision for Changing Spindle Speed by means of Lever for Feeding Drill 829
Flexible Coupling, A Simple. Robert S. Brown 325
Flexible Shaft, Hahn..... 573
Flexible Shafts. Geo. W. Armstrong 803
Flexible Staybolts, Making Nuts for 712
Flooring with Regard to Sprinklers, The Arrangement of 522
Fluting Concave Mill, Selecting Cutter for 477
Flux in Melting Brass, Glass Used as a 463
Fly-wheels, Hoist Drums and Piston Rings on the Libby Turret Lathe, Finishing... 805
Flying Machine as a Commercial Product, The Arrival of the 428
Flying Machine Performance, Remarkable 856
Flying Machines Sold in England 613
Fly-wheel Bid, The Lady Manager and the. M. E. Canek 521
Fly-wheels for Motor-driven Planers, On Determining Size of. W. Owen 224
Fly-wheels for Planers..... 151
Fly-wheels on the Gisholt Turret Lathe, Finishing Gas Engine 391
Fly-wheels with Rims of Reinforced Concrete 613
Foglesong Mch. Co.:
Dayton Power Hammer... 647
Follower Rest, Louge & Shipley Roller 117
Foot and Power Press, Combination 266
Foot Press for Cutting Paper Blanks 828
Foote-Burt Co.:
High Duty Drill Press.... 565
Force, Wm. C.:
Method of Graduating in the Lathe 104
Force Required to Move Crane Trolleys, Formulas for. John S. Myers 99
Foreign Letter Postage Rates 126
Foreign Machine Tool Competition 696
Foreign Notes, Miscellaneous:
62, 124, 203, 271, 342
496, 578, 663, 748, 910
Foreign Trade, A Fault of Handling 612
Foreman Should be, What a. E. Viall 44
Forests, Preserving the..... 698
Forge Shops, Reasons Why so Little is Heard from. James Cran 709
Forging a Lathe Boring Tool. J. F. Sallows 21
Forging and Machining at the Bethlehem Steel Works, Armor Plate 501
Forging Dies, Hob for. F. R. Carstensen 474
Forgings, Drop and Stamped. Joseph Horner 600
Formed Tool-holder, Improved Circular. Frank G. Sterling 324
Forming Job, Punch Press. S. A. McDonald 467
Forming Tools, Formulas for Circular 295
Forms, Uniformity in Shop.. 307
Formula for Determining Spur Gear Cutter Number for Spiral Gears, Derivation of 540
Formulas for Milling End Mills and Clutches. Irving Banwell 397
Formulas, Standard Notation for Engineering 380
Formulas, Standard Notation for Engineering 508
Formulas, The Convenience of 370
Forney (Matthias N.), Obituary of 421
Forward, Look 379
Fosdick Boring, Drilling and Milling Machine 54
Foul Air, Dividends and.... 532
Foundations, Drop Hammer 879
Foundations, Erecting Machinery. J. A. Pratt..... 240
Foundations for Drop Hammers, Concrete 542
Foundry Practice, Tricky... 799
Foundry Work, Training of Apprentices in 381
Four Cylinder, Balanced, Simple, Locomotive Adopted as Standard for English Railway 455
Fox Machine Co.:
Motor Drive for the Fox Light Miller Universal Dividing Head 811
Fractional Reading Micrometer, Direct. Chas. A. Kelley 628
Fractions by the Method of Continued Fractions, How to Obtain Approximate. Mitchell Dawes 877
Frames, The Designing of Machine. E. A. Fessenden 840
Freight, Mails, etc., Chicago's Tunnel System for. 156
Freight Rates on Exports, German Manufacturers Helped Only by Reduced. Fairplay 471
Freighter, Launching a Great Lakes. Ralph E. Flanders. 837
French Language, Catalogues and Other Printed Matter Sent to France Should Be in the 454
French Machine Tool Trade, The 154
French Self-tightening and Quick-releasing Drill Chuck 700
Friction and Lubrication.... 537
Friction Brakes 871
Friction Clutch, Design of Steel Plate 327

Friction Coupling, Haeberlin 531
Friction Coupling of Simple Design 783
Friction Drill Press with Combined Foot and Hand Feed, Barnes 484
Friction Drive, Power Transmission by 352
Friction-driven Sensitive Drill Press of Novel Design 569
Front Cross Feed for Gould & Eberhardt Shapers 483
Frosted Incandescent Lamps, Difference in Life of Plain Bulb and 137
Fuel for Locomotives, Liquid. 90
Fuel Oil Storage System. E. Falkenrath 714
Fuels, Comparative Value of Alcohol and Gasoline as Engine 588
Furnace, Oil Tempering 829

Gage, Contour. H. D. Yoder. 253
Gage Lapping Machine Built by the Waltham Machine Works 486
Gage, Piping an Air. M. E. Canek 86
Gages for Accurate Measurement, Dial 264
Gages, Making Thread. A. L. Monrad 387
Gages, Pack Hardening. E. R. Markham 719
Gages, Some High Pressure 380
Gages, Wells Bros. Standard and Limit 59
Gaging of Heats for Hardening, The. Geo. T. Coles 548
Galling of Metals. W. S. Leonard 253
Galvanized Iron, Painting 516
Galvanized Wire, To Test 179
Galvanizing, Sherardizing or Dry 890
Galvanizing, The Art of 383
Gang Press, Bliss Automatic. 639
Gang Press, Toledo Double Pitman 906
Ganssien, H.:
The Elastic Limit and the Testing of Materials 296
Garage, Bill's. Ethan Viall. 220
Gardam & Son, Wm.:
Adjustable Multiple Spindle Drill 650
Gardner Mch. Co.:
Combination Single and Double Disk Grinder 338
Double Disk Grinder 821
Comparative Test of Abrasive Disks on Cast Iron 880
Combination Disk Grinder. 902
Garvin Mch. Co.:
Automatic Tap Fluter 197
Automatic Slot Milling Attachment for Garvin Milling Machine 731
Gas Engine Blowing Unit, A 2,000 H.P. 581
Gas Engine Crank-shafts, Formulas for 309
Gas Engine Fly-wheels on the Gisholt Turret Lathe, Finishing 391
Gas Engine Starter, A Novel. 614
Gas Engine, The Present Position of the 234
Gas Engine Troubles, Some 394
Gas Engine Valves, The Design of Springs for. F. E. Whittlesey 585
Gas Engines, A Year's Experience with 310
Gas Engines for Steam Power, U. S. Steel Corporation to Substitute 26
Gas Engines, Four 4,000 H.P. Jas. Cooke Mills 278
Gas Engines, The Working of Large 29
Gas Made Odorless without becoming Non-Explosive, Coal 277
Gas Poisoning through Gas Engines 308
Gas Power Number, Cassier's 272
Gas, Steam Whistle Operated by. Arthur Knapp 111
Gas Turbine, Recent Development of the 788
Gasoline as Engine Fuels, Comparative Value of Alcohol and 588
Gasoline-Electric Generating Plants 183
Gasoline, Gas, Steam and Electricity for Small Powers, Comparative Costs of. 97
Gasoline Motor. Adams-Farwell Aeronautic 758
Gear and Pinion Cutter, Waltham Automatic Precision. 413
Gear Cutter:
A Kink in Gear Cutting 178
Gear Cutter, Eberhardt Bros. No. 3 Automatic 414
Gear Cutter Grinding Machine, Brown & Sharpe 559
Gear Cutting, A Kink in. Gear Cutter 178
Gear Cutting Attachment for Automatic Spur Gear Cutter, Bevel 264
Gear Cutting, Emergency Methods in 167
Gear Cutting Machine, Cincinnati Automatic 638
Gear Cutting Machine, Eberhardt Bros. Small Automatic 637
Gear Cutting Machinery. Ralph E. Flanders:
1 283
2 355
3 429
4 509
5 589
6 673
7 761
8 845
Gear Cutting Machine, Waltham Automatic Precision. 744
Gear Design, Tumbler. John Edgar 207
Gear, Fitting Teeth in a Broken 18
Gear Generating Machine, Grant-Lees 114
Gear Guards 310
Gear Hobbing Machine, Farwell Automatic Spur 727
Gear Hobbing Machine, Gould & Eberhardt 190
Gear Hobbing Machine, Newton 262
Gear Memories, Toothed. Internal 19
Gear Segments, Milling Fixture for Finishing. W. Alton 395
Gear, Speed Reducing 904
Gear Teeth, Milling Machine Attachment for Chamfering Transmission 489
Gear Teeth with the Velocity, The Variation of the Strength of. Ralph E. Flanders 279
Gear Testing Device, German Bevel 377
Gear, The Stub-tooth 536
Gear Train for Boring Bar, Feed Motion 113
Geared Head Lathe, Bridgeford 488
Gearing, Hindley Worm 378
Gears, Cleaning Cast 377
Gears, Derivation of Formula for Determining Spur Gear Cutter Number for Spiral. H. W. Henes 540
Gears, Epicyclic 634
Gears, Figuring Lathe Change 327
Gears for Milling Machine when Cutting Spirals, Change 717
Gears, Hobs for Worm. John Edgar 37
Gears, Information for Cutting Spiral. L. H. Georger 887
Gears, Machining Change. Racquet 546
Gears of Unusual Dimensions, Cut 856
Gears, Rack for Change. W. F. Groene 886
Gears, To Find the Number of Cutter for Spiral. E. G. Eberhardt 43
Gears, To Obtain Face Angle of Bevel 477
Gears with a Rotary Cutter, Cutting Bevel. H. P. Fairfield 73
Gems, Construction of Artificial 786
General Electric Co.'s Apprenticeship System for Training Draftsmen 85
General Electric Co.:
Centrifugal Air Compressor 257
Single-phase Motor for Machine Driving 261
General Pneumatic Tool Co.:
Shepard Electric Hoist 336
Generator Capacity to Motor Horse-power in Electric Drive Installations, Ratio of 158
Generator Sets, Sturtevant Vertical Compound Engine. 736
Genius, Recognition of our Rejected Thoughts in Every Work of 111
Georger, L. H.:
Information for Cutting Spiral Gears 887
German Bevel Gear Testing Device 377
German Cruiser, Results of Trials of New Turbine 373
German Design of Adjustable Tap 867
German Drilling Machines, Advanced Designs of. Oskar Kylin 687
German Government's Interest in Airships 534
German Government Railways Pay Premiums to Employes for Inventions Useful in Railway Practice 232
German Manufacturers Helped Only by Reduced Freight Rates on Exports. Fairplay 471
German Manufacturers not to Take Part in Toulouse Exposition 613
German Milling Machines, Modern. Oskar Kylin 892
German Ship to be Equipped with Siemens-Schuchardt Electric Propulsion System 454
German Society of Engineers Ask for Funds to Maintain *Technolexicon* 454
German Taper Shanks, Standard 28
German Type of Belt Shifter. 695
Germany for 1907, Motor Car Trade in 879
Germany, Increase in Coal Consumption of 786
Germany, Increase of Imports of Austrian Petroleum into 613
Germany, Large Number of Automobiles in Use in 613
Germany, Over-supply of Technically Educated People in 522
Germany, Production of Denatured Alcohol in 553
Germany, Railway Ferry between Sweden and 380
Germany, The Manufacture of Machine Tools in 616
Germany, Writing to. Robert Grimshaw 471
Gillis, L. N.:
Planer Chuck 545
Gisholt Mch. Co.:
Boring and Turning Mill 265
Double Emery Grinder 904
Gisholt Turret Lathe, Finishing Gas Engine Fly-wheels on the 391
Gisholt Turret Lathe, Finishing Pistons and Piston Rings on the 475
Gisholt Turret Lathe, Making Cross-head Pins from Bar Stock in the 705
Glass, Electromagnets for Lifting 156
Glass Telegraph Poles 308
Glass, To Dissolve. S. W. Green 551
Glass Used as a Flux in Melting Brass 463
Glue, To Make Liquid 551
Gold, Increase in Production of 26
Gorton Mch. Co., Geo.:
Cutting-off Machine 492
Gould & Eberhardt:
Emergency Methods in Gear Cutting 167
Gear Hobbing Machine 190
Front Cross Feed for Gould & Eberhardt Shapers 483
Rack-cutting Machine 563
Stocking Cutter 810
Governing Device for Internal Combustion Engines 233
Gradenwitz, Alfred:
Novel High Compression Oil Engine 5
High Pressure Turbo-Compressors 351
Graduating in the Lathe, Method of. Wm. C. Force. 104
Graduating on the Planer. D. A. Hampson 396
Grain of Trees, Cause of Winding 89
Grant-Lees Gear Generating Machine 114
Granted, Taking Things for. 807
Gray & Prior Mch. Co.:
Gas or Oil Heated Soda Kettle 259
Great Lakes Freighter, Launching a. Ralph E. Flanders 837
Greaves, Klusman & Co.:
Armature Banding and Field Coil Winding Lathe 647
Grebo:
A Power-producing Planer. 686
Green River Screw Plate for Brazed Brass Tubing 483
Green, S. W.:
To Dissolve Glass 551
Greene, Howard:
Some Automobile Factory Wrinkles 46
Gregor:
Lubricant for Cutting Aluminum 179
Gribben, Walter:
A Study in Spirals 522
Small Accurate Face-plate Work 883
Gridley Multiple Spindle Automatic Screw Machine 401
Griggs, H. K.:
Cannon for Shop Use 248
To Remove Pulleys from Shafts 468
Grimshaw, J. T.:
Fitting Trunnions to a Large Drum 710
Grimshaw, Robert:
To Calculate the Side of an Inscribed Polygon 398
Writing to Germany 471
Killing Men and Fining Employers 472
On Sending Electrotypes Abroad 707
Hardening of High Speed Steel Very Important 714
Grinder and Frame for Portable Drill, Center 649
Grinder, Besly No. 6 Heavy Spiral Disk 657
Grinder, Besly Piston Ring Disk 820
Grinder, Bridgeport Drop Apron Tool 416
Grinder, Combination Double and Single Disk 338
Grinder, Cylinder Automatic. 332
Grinder, Dust Exhauster for Walker Surface 901
Grinder, Edgemont Wet Tool. 646
Grinder Ever Built, Largest. 113
Grinder for Pipe Threading Dies and Cutter Disks, Special 188
Grinder, Gardner Combination Disk 902
Grinder, Gardner Double Disk 821
Grinder, Gisholt Double Emery 904
Grinder, Improved Saxon Ring 574
Grinder, "Lektro" Portable Universal 331
Grinder, Lippincott Water Motor 263
Grinder, Motor Drive Arrangement for Wells 576
Grinder, Motor-Driven Tool. 901
Grinder, New Besly Spiral Disk 137
Grinder, No. 3 Walker Surface 409
Grinder, Ransom Motor-Driven Tool 899
Grinder, Springfield Automatic Ring Wheel Edge 643
Grinder, Sterling Combination Wet and Dry 576
Grinder, The LeBlond Universal Cutter and Tool 724
Grinder, United States Electrical Tool Co.'s Bench 824
Grinder, Wilmarth & Morman Combination Drill, Cutter, and Reamer 737
Grinder, Wilmarth & Morman Surface 567
Grinder, Woods Engineering Co.'s Universal Tool and Cutter 478
Grinders, Speed Controller for Electrically-Driven 196
Grinding a Gear-Cutter 808
Grinding and Grinding Machines. Carl Olson 526
Grinding Angular Milling Cutters, Fixture for. P. Yorgensen 323
Grinding Attachment for Thompson Grinding Machine, Cylinder 566
Grinding Fixture, Ball. W. A. Sawyer 631
Grinding Fixture for End Measure Rods. G. R. Richards 884
Grinding, Helps and Don'ts for 862
Grinding Machines, Bignall & Keeler Die-Chaser 898
Grinding Machine, Brown & Sharpe Gear-Cutter 559
Grinding Machine, Heald Internal 558
Grinding Machine, Holroyd Drilling Machine and 485
Grinding Machine, Improved Square Hole 121
Grinding Machine, Small Norton 333
Grinding Machine, Norton Motor-Driven 903
Grinding Piston Rings, Fixture for. E. W. Norton 798
Grinding, Precision 29
Grinding Reamers. F. P. Hebard 174
Grinding Threading Die-Chasers. C. C. Cleverdon. 171
Grinding Threading Dies 249
Grinding Wheels, Landis Corrugated 815
Grinding Wheels, Tests of Emery 234
Groene, Wm. F.:
Special Lathe and Tool Equipment for Turning Cone Pulleys 464
Rack for Change Gears 886
Grooved Shafts for Motor Cars 611
Growth, Building Shop for. 696
Guards, Gear 310
Guide Bars for Lateral Wear, Lining Locomotive. M. H. Westbrook 468
Gyroscope Installed on Small Steamer to Prevent Rolling, Schlick 698

Hack-Saw Blades Hardened? How Are 891
Hack-Saw Blade, Saving a. A. E. Fish 254
Hack-Saw, Challenge High-Speed Power 905
Hack-Saw, Eclipse Power 826
Hack-Saw Giving Relief on the Return Stroke, Power. 335
Hack-Saw Machine, Racine High-Speed Automatic 824
Hack-Saw Machine, Sam and His. A. P. Press 866
Hack-Saw Machine, Sterling Motor-Driven 55
Hack-Saw of Original Design, Tandem 828
Hack-Saw Producing Drawing Cut 828
Hack-Saw, The Use and Abuse of the. C. F. Emerson 712

Hack-Saw, Variable Stroke, Quick-Return 188
Hack-Sawing, An Interesting Kink in 672
Hack-Saws, Simonds Screw-Slotting 416
Haeberlin Friction Coupling.. 531
Hahn, William:
Flexible Shaft 573
Half-Tone Illustration in Journalism, A Feat of..... 783
Hamilton Mch. Tool Co.:
No. 3 Horizontal Drilling, Boring, and Milling Machine 417
Attachments to the Hamilton Lathes for Taper Turning and Relieving.. 573
42-inch Heavy Lathe..... 648
Double Back-Geared Lathe for Heavy Work..... 907
Hammer Adapted to Small Drop Forging Work, Steam 828
Hammer, Bethlehem Steam Drop 490
Hammer, Dayton Power..... 647
Hammer to its Shaft, Fiber Wedge for Securing. D. A. Hampson 804
Hampson, Donald A.:
Driving Threaded Studs in a Lathe Without Marring the Threads..... 325
Graduating on the Planer .396
Describing a Circle Around a Drilled Hole..... 400
A Dumb-Bell Patch..... 716
Fiber Wedge for Securing Hammer to its Shaft.... 804
Handles, Holder for Turning Ends of. Original..... 112
Hardened? How are Hack-Saw Blades 891
Hardened Tools, The Collapsing of. J. F. Sallows.... 325
Heating Equipment, Quick Installation of Steam..... 869
Hardening and Tempering, Local. William A. Painter 853
Hardening Cast Iron..... 551
Hardening, Construction of Dies to Prevent Breakage in. K. L. Ross..... 42
Hardening of High Speed Steel Very Important. Robt. Grimshaw 714
Hardening, Shrinkage and Expansion of Steel in. J. F. Sallows 800
Hardening Spring Collets. Geo. T. Coles..... 471
Hardening Steel or Steel Alloys, New Method of.... 698
Hardening Temperature, Indicator for Ascertaining... 699
Hardie, B.:
Moving a Shop..... 304
Hardinge Filing Machine.... 199
Hardening Process, Barium Chloride 229
Hardening, The Gaging of Heats for. Geo. T. Coles.. 548
Harring, H. K.:
Selecting Cutter for Concave Mill 708
Harrington, Son & Co., Inc., Edwin:
Four-Spindle Locomotive Frame Drill 829
Hart Mfg. Co.:
"Buckeye" Die-Stock 570
Hartford, First Annual Industrial Show in..... 205
Hartford Industrial Show, First 342
Haskell, J. B.:
Simple Indexing Device.... 801
Haworth & Co.:
New Sensitive Radial Drilling Machine 732
Heald Mch. Co.:
Internal Grinding Machine 558
Heald Machine Co., Notes from the New Shops of the 597
Heat from Electric Generators to be Used in Heating Rooms, Surplus 613
Heaters, Calculation of Fans and. Chas. L. Hubbard.. 703
Heating, An Idea in Electric. 787
Heating and Ventilation of Machine Shops, The. Chas. L. Hubbard 1
Heating of Locomotive Feed Water 428
Heats for Hardening, The Gaging of. Geo. T. Coles.. 548
Hebard, F. P.:
Grinding Reamers 174
Height of the Middle Ordinate of an Arc, Obtaining the. H. S. Quackenbush.. 886
Height of the Middle Ordinate of an Arc, Rule for Obtaining the 470
Hele-Shaw Clutch, The..... 650
Helium Contained Hydrogen, Prof. Onnes' "Solidified"... 698
Helium Produced in Solid Form 613
Help, Selecting 87
Helps and Don'ts for Grinding 862
Hendershot Shaft Coupling.. 416
Hendey Mch. Co.:
Single Pulley and Motor-Driven Geared Head Lathes 651
Henes, H. W.:
Derivation of Formula for Determining Spur Gear Cutter Number for Spiral Gears 540
Hess, Henry:
The Marvelous CO_2 Engine 322
High Compression Oil Engine, Novel. Alfred Gradenwitz 5
High-Pressure Gages, Some.. 380
High-Pressure Turbo-Compressors. Afred Gradenwitz 351
High Pressures, Connections for 134
High School in Cleveland, New Technical 669
High-Speed and Air-Hardening Steels, To Anneal. A. A. Stevenson 551
High-Speed Cutting Steel, Proper Cutting Speed for.. 608
High-Speed Drill Press, An English 333
High-Speed Drilling, An Example of 707
High-Speed Elevators 235
High-Speed Engine and Reducing Lathe, LeBlond.... 413
High-Speed Planers, Economy of 700
High-Speed Pulleys, Notes on. Wm. Sangster 800
High-Speed Steel, Annealing. C. U. Scott..... 173
High-Speed Steel for Milling Cutters 453
High-Speed Steel Milling Cutter in Cutting Hard Materials, Advantage of..... 534
High-Speed Steel, Notes on.. 523
High-Speed Steel Very Important, Hardening of. Robt. Grimshaw 714
High-Speed Steels..... 255
Highest Building in New York, Plans for the..... 870
Hilbert Mch. Co.:
2½-foot Radial Drill..... 186
Universal Drilling Table... 418
Triple-Geared Upright Drilling Machine 565
Hillix, Foster F.:
Lathe Centers with High-Speed Steel Points..... 323
Hindley Worm-Gearing 378
Hisey-Wolf Mch. Co.:
Portable Electric Radial Drill 335
Hob for Forging Dies. T. R. Carstensen 474
Hobbing Machine, Automatic Worm-Wheel 907
Hobbing Machine, Spur Gear. 902
Hobbing Machine, Farwell Automatic Spur Gear..... 727
Hobs for Worm Gears. John Edgar 37
Hoefer Pipe-Threading Die Stock 192
Hoist Drums and Piston Rings on the Libby Turret Lathe, Finishing Fly-wheels 805
Hoist, Shepard Electric..... 336
Hoist, Yale & Towne Electric Triplex 735
Hoists, Power Required for Cranes and. Ulrich Peters. 161
Holder, Carr Reversible Cutting-off Tool 201
Holder for Turning End of Handles, Original 112
Holding Large Pipe while Threading. Sirius 178
Hole, Describing a Circle Around a Drilled. Donald A. Hampson 400
Holes, Device for Drilling Square or Irregularly Shaped 867
Holes, Method of Drilling Curved. K. R. Cross..... 249
Holgate, Claude E.:
Money and Money-Making Machinery 347
Hollow Mill, Adjustable. W. Alton 890
Holman (M. L.), President of the A. S. M. E..... 282
Holroyd & Co., Ltd., John:
Drilling Machine and Grinding Machine 485
Hopper Side Intersections, Angles of 579
Horizontal Feed on a Vertical Milling Machine, Combined Automatic Vertical and 382
Horizontal Milling Attachment for Vertical Miller... 644
Horizontal Milling Machine with Supplementary Vertical Spindles, Ingersoll..... 482
Horizontal Tandem Steam Engine, Large 156
Horner, Joseph:
Drop and Stamped Forgings 600
Horse-power Transmitted by Cast Iron and Raw-Hide Pinions for 1-inch Width Face Only, January, 1908, Data Sheets Give..... 390
Hose Coupling, Dallett Automatic 60
Hot Bearings. E. Kistinger. 141
Howarth, H. A. S.:
Spring Chucks 107
Hubbard, Chas. L.:
The Heating and Ventilation of Machine Shops.. 1
Practical Points on Surveying 445
Calculation of Fans and Heaters 703
Huddleston, H. J.:
Filling and Painting Machine Tools 507
Hudson and Brooklyn Tunnels, Opening of..... 466
Hurley, Richard D., Obituary of 273
Hydraulic Apparatus, Design of 441
Hydraulic Elevators, Electric vs. 232
Hydraulic Press Cylinders, New Departure in the Design of 699
Hydraulic Pressure, The Usefulness of. Walter Cantelo. 174
Hydraulic Valve of English Design 451
Hydro-Electric Power Station Using Highest Head of Water in World..... 870

Ideals, Value of..... 785
Ignition of Explosives, New Method for the..... 786
Illustration, Photographs for. 24
Imitations of American Machine Tools. David R. Millington 399
Inattention 612
Increased Production, The Economical Limit of..... 868
Index and Spiral Head, Becker-Brainard Universal. 50
Index Head, Obtaining Angular Movements with the. John Edgar 47
Index Issued, Complete Data Sheet 508
Indexes of MACHINERY and RAILWAY MACHINERY Ready 88
Indexing Attachment, Kempsmith Horizontal Circular Milling and 825
Indexing Device, Simple. J. B. Haskell 801
Indexing Head, Obtaining Angular Movements with the. J. Price 323
Indian Government's Grant of Money to Louis Brennan.. 308
Indicator for Ascertaining Hardening Temperature... 699
Indicator for Thread Cutting. John Bradford 109
Industrial Conditions, Balanced 307
Industrial Development, An Example of Japan's..... 380
Industrial Life Insurance in Massachusetts to Be Undertaken by Savings Banks... 21
Industrial Notes from Europe. James Vose.....61, 123 202, 270, 340, 419, 495
Industrial Show, First Hartford 342
Industrial Show in Hartford, First Annual 205
Industrial Workers, Education for. A. D. Dean..... 6
Industries of Birmingham... 234
Inefficiency of Workmen, The Growing 230
Inefficiency of Workmen, The Growing 394
Ingersoll Milling Mch. Co.:
Milling Machine with Horizontal, Vertical and Angular Spindles 417
Horizontal Milling Machine with Supplementary Vertical Spindles 482
Column Type Combined Horizontal and Vertical Spindle Milling Machine. 721
Special Horizontal Spindle Milling Machine of the Planer Type 907
Ink Bottle, Securing the. C. H. Ramsey 252
Ink from Drawings, Removing. A. L. Campbell..... 804
Inscribed Polygon, Calculating the Side of an. Fred Walsleben 553
Inserted Blade Milling Cutter, Improved 27
Inserted High-Speed Cutters, Inexpensive Tools with. Charles Thiel 48
Inside Micrometer for Setting Calipers. Sirius..... 49
Insulating Material, New.... 506
Insurance in Massachusetts to be Undertaken by Savings Banks, Industrial Life 21
Interchangeable Jigs for Drilling Collars 46
Interest in Work..... 610
Interlocking Formed Milling Cutters 785
Internal:
Toothed Gear Memories... 19
Internal Combustion Compressed Air Engines, New Method of Working..... 523
Internal Combustion Engines, Governing Device for..... 233
International Mch. Tool Co.:
Libby Turret Lathe..... 480
Finishing Fly-wheels, Hoist Drums, and Piston Rings on the Libby Turret Lathe 805
Invention, Demonstrating an. M. E. Canek..... 168
Inventions, Obtaining Credit for 774
Inventions Useful in Railway Practice, German Government Railways Pay Premiums to Employes for..... 232
Inventive Activity in Motor Car Industry Falling Off.. 870
Inventor, The Tribulations of an. John..... 365
Inventors, Patents and. E. C. Smith 684
Inventors, Patents and. H. Addison Johnston 889
Iron Beams, Influence of Variable Load on..... 535
Iron Castings, Faults of. Forrest E. Cardullo.
1 71
2 135
Iron Dust Alleged Cause of Appendicitis 77
Iron, Painting Galvanized... 516
Iron-Producing Country, China's Possibilities as an. 614
Iron that Cannot be Heated, To Join Together Two Pieces of. J. M. Menegus. 179

James Mfg. Co., D. O.:
Speed-Reducing Gear 904
James, D. W.:
Puzzling Arithmetical Expressions 632
Japanese Cruiser, Launching of 380
Japanese Cruisers, Giant Turbines for 757
Japanese Lacquer 170
Japan's Advance in Machine Building 786
Japan's Industrial Development, An Example of..... 380
Jaws, Pump Vise. S. Oliver. 42
Jet Propulsion, Failure of... 451
Jib Cranes 634
Jib Cranes, Design of Light Structural. W. H. Butz... 211
Jig, A Blacksmith's Drill. J. F. Sallows 108
Jig, A Screw Filing. Raymond C. Williams..... 112
Jig, Drill. B. M. Weller.... 547
Jigs and Fixtures. Einar Morin:
1 517
2 621
3 689
4 775
5 857
Jigs and Fixtures in the Pratt & Whitney Co.'s Shops 437
Jigs for Drilling Collars, Interchangeable 46
Jigs, Locking Device for. Tool Designer 632
Joachimson, Martin:
Handy Tools for the Drafting Board 716
The Use of the Ordinary Rule for Dividing..... 804
John:
The Tribulations of an Inventor 365
Johnson & Bassett:
Self-oiling Loose Pulley... 58
Shaft Straightener 259
Johnson, Obituary of Fred A. 834
Johnston, H. Addison:
On the State of the Patent Office 449
Patents and Inventors ... 889
Join Together two Pieces of Iron that cannot be Heated, To. J. M. Menegus.... 179
Joint, Mutual Machine Co.'s Universal 646
Joint, To Make a Watertight. J. D. Page 551
Jones, J. M.:
Dial Measuring Wheel.... 562

Kavanagh, M. R.:
Device for Making Wax Fillets 249
Raising Draftsman's Protractor Above the Surface of the Drawing.... 326
Standard Drawing-room Methods 368
Kearney & Trecker Co.:
Heavy Spiral Cutting on the Milwaukee Miller... 463
Vertical Double Spindle Milling Attachment 738
Three-spindle Attachment for Milling Spiral Gears. 817
Universal Milling Machine. 893
Keeping Things Seven Years, On 306
Kelley, C. A.:
Draftsman's Section Liner. 178
Kelly Tool Co.:
Adjustable Reamer 814
Kelvin, Lord, Obituary of... 344
Kelvin, Memorial Services for Lord 421
Kempsmith Mfg. Co.:
Horizontal Circular Milling and Indexing Attachment 825

Kettles for German Soldiers, Paper 204
Key-extracting Device 87
Keyway, Making a Sleeve with an Accurate. Robert Mayhew 469
Keyways, Device for Laying Out and Testing. W. O. Renkin 450
Keys and Keyway, Fitting... 255
Killing Men and Fining Employers. Robert Grimshaw. 472
Kinks, A Few Handy. Vim.. 889
Kistinger, E.:
Hot Bearings 141
Klein, James J.:
A Swaging and Blanking Die 715
Knapp, Arthur:
Steam Whistle Operated by Gas 111
Knife Planimeter, Pocket.... 43
Knight, W. A.:
How to Handle a File.... 863
Knowles, W. H.:
Device for Making Wax Fillets 713
Knurls, Making. Ethan Viall 716
Koppel, Obituary of Arthur.. 751
Krieger Tool & Mfg. Co.:
Chicago Boring Tool Holder 575
Kroll, Moritz:
Apparatus for Measuring the Slip of Belts 627
Device for Oiling Loose Pulleys Which are Inaccessible for Ordinary Oiling Devices 632
Kronprinzessin Cecilie, The.. 62
Krupp Works, Enormous Profits of 534
Kylin, Oskar:
Novel Method of Producing Threads 320
An American Mechanic in Europe:
1 577
2 660
3 746
4 829
5 908
Advanced Designs of German Drilling Machines.. 687
Modern German Milling Machines 892

Labor, Drafting as Productive 868
Labor, Economy of Non-productive 533
Lacquer, Japanese 170
Ladle, Unique Bearing for End-tipping Slag 530
Lady Manager and the Flywheel Bid, The. M. E. Canek 521
Lake, E. F.:
Nickel Steel 34
Vanadium Steel 65
Lamps, Difference in Life of Frosted Incandescent and Plain Bulb 137
Lancaster Mch. & Knife Wks.:
Universal Breast Drill.... 826
Landis, Ezra F.:
Corrugated Grinding Wheels 815
Landis Mch. Co.:
Stay Bolt Cutter 418
Lapland, Building of Large Power Station in 870
Lapointe Mch. Tool Co.:
Spiral Broaching Machine. 656
Double Drill Press 659
A Remarkable Broaching Machine and its Work.. 813
Laps and Lapping. A. J. De Lille 888
Lapping Flat Work and Gage Jaws. F. E. Shailor..... 139
Lapping Machine Built by the Waltham Machine Works, Gage 486
Lathe, An Oregon 686
Lathe and Tool Equipment for Turning Cone Pulleys, Special. Wm. F. Groene.. 464
Lathe, Armature Banding and Field Coil Winding 647
Lathe, Barnes Sliding Extension Gap 812
Lathe Boring Tool, Forging a. J. F. Sallows 21
Lathe, Bridgeford Geared Head 488
Lathe, Bridgeford 36-inch Geared Head 653
Lathe, Bullard Rapid Production Vertical Turret 119
Lathe Centers with High Speed Steel Points. Foster F. Hillix 323
Lathe Change Gears, Figuring 327
Lathe Chucks, Two-jawed. Ethan Viall 625
Lathe Chuck Patented, The Two-jaw 752
Lathe, Deep Drilling Attachment for the 117
Lathe, Dividing Head for Use with the 451
Lathe, Drilling and Reaming in the. H. J. Bachmann.. 467
Lathe, Facing Concave Work in the. W. J. Sansom..... 473
Lathe, Finishing Fly-wheels, Hoist Drums and Piston Rings on the Libby Turret. 805
Lathe, Finishing Pistons and Piston Rings on the Gisholt Turret 475
Lathe for Boring, Forming and Turning, Davis Turret. 189
Lathe for Heavy Work, Double Back-geared 907
Lathe, Full Swing Side Carriage Turret 257
Lathe, Hamilton 42-inch Heavy 648
Lathe, Improved Miami Valley 13½-inch Engine..... 489
Lathe, Large Special Pond... 407
Lathe, LeBlond High-speed Engine and Reducing..... 413
Lathe, Libby Turret 480
Lathe, Lodge & Shipley Portable 723
Lathe, Making Cross-head Pins from Bar Stock in the Gisholt Turret 705
Lathe, Method of Graduating in the. Wm. C. Force.... 104
Lathe, Micrometer Stop for the. J. L. Marshall..... 400
Lathe, Milling Attachment for the. Ethan Viall 544
Lathe, Milling on the. E. R. Seiter 178
Lathe, Milwaukee 16-inch.... 741
Lathe, New Design of the Lo-Swing 53
Lathe, Rahn-Carpenter 16-inch Motor-driven..... 730
Lathe, Schellenbach 16-inch Geared Head 741
Lathe, Sellers High Power Driving Wheel 733
Lathe Shear a Poor Anvil.... 504
Lathe Spindles, Home-made Machine for Boring. Ed. B. Eby 801
Lathe, Springfield High Power Motor Driven 820
Lathe, Springfield Motor Driven Brass Finishers' 576
Lathe, Tools for Winding Springs in an Engine.... 248
Lathe, Wells Chucking..... 193
Lathe, Wells Turret 59
Lathe, Whitcomb-Blaisdell 20-inch 122
Lathe without Marring the Threads, Driving Threaded Studs in a. D. A. Hampson 325
Lathe Work on a Drill Press, Doing. M. H. Westbrook. 474
Lathes and Milling Machines, Motor Drive Mechanisms for LeBlond 403
Lathes, Fischer Installation of Wood Turning 268
Lathes for Taper Turning and Relieving, Attachments to the Hamilton 573
Lathes, Hendey Single Pulley and Motor-driven Geared Head 651
Lathes, Mossberg Pulley Crowning Attachment for.. 485
Lathes, New Line of Heavy New Haven 415
Launching a Great Lakes Freighter. Ralph E. Flanders 837
Laying Out and Testing Keyways, Device for. W. O. Renkin 450
Laying Out a Propeller. J. S. Watts 17
Laying Out a Propeller..... 272
Laying Out Cams for Rapid Motions. F. H. Sibley.... 374
Laying Out Offset Levers. E. R. Seiter 250
Lea Equipment Co.:
Motor-driven Cold Metal Saw 900
Lead Containing Tin and Antimony, Corrosion of..... 239
Lead, Distinction between Pitch and 113
Lead in Liquid Air, Effect of Very Low Temperature on. 786
Lead of Taps and Screws, Testing the. Erik Oberg.. 317
Lead Pencil from Breaking, To Prevent. G. F. Monahan 49
Lead Screws on the Thread Milling Machine, Cutting Long 860
Lead, To Test White. M. E. Canek 551
Leader of Men, A..... 452
Leather Belt—Largest Ever Manufactured 145
Leather Fillets to Patterns, Applying. J. W. Wolfenden 633
LeBlond Mch. Tool Co., R. K.:
Motor Drive for LeBlond Lathes and Milling Machines 403
High-Speed Engine and Reducing Lathe 413
Special Lathe and Tool Equipment for Turning Cone Pulleys 464
Alignment Tests of LeBlond Milling Machines 669
Universal Cutter and Tool Grinder 724
LeBlond Machine Tool Co., Rack-Cutting Machines in the Shops of the R. K.... 541
"Lektro" Mfg. Co.:
"Lektro" Portable Universal Grinder 331
Leonard, W. S.:
Galling of Metals..... 253
Comment on Universal Vise 473
Extension Arms for Planing Wide Work..... 887
Lettering Maps and Drawings for Reproduction, Neat Method of 308
Leveling a Line-Shaft, Method of. Julian D. Page..... 885
Leveling Blocks for Planers, Adjustable 778
Levers, Laying Out Off-set. E. R. Seiter..... 250
Liability Bill, New Employers' 587
Liability of Employers..... 155
Liability of Employers..... 231
Libby Turret Lathe..... 480
Libby Turret Lathe, Finishing Fly-wheels, Hoist Drums, and Piston Rings on the 805
Library to Open Evenings, Free Engineering 272
Light-house, Swift Currents Retard Construction of.... 391
Light, Importance of Good... 534
Light Installations, Estimated Life of Electric Power and 91
Light on Vegetation, Effect of Artificial 871
Lighting, An Advantageous System of 760
Lighting, Individual Machine 807
Lighting of Drafting-Rooms.. 306
Lighting of Drafting-Rooms, The 801
Lighting, Shop 252
Limitation of Automatic Machinery 785
Line-Shaft, Method of Leveling a. Julian D. Page.... 885
Lining Car Brasses..... 377
Lining, Kink for. Triangle.. 633
Lining Locomotive Guide Bars for Lateral Wear. M. H. Westbrook 468
Links, Device for Holding Roller Chain while Replacing 657
Liquid Fuel for Locomotives 90
Lippincott Motor Grinder Co.:
Lippincott Water Motor Grinder 263
Lo-Swing Lathe, New Design of the 53
Lock Nut, Simple Form of... 695
Locking Device for Jigs. Tool Designer 632
Locomotive Adopted as Standard for English Railway, Four-Cylinder, Balanced, Simple 455
Locomotive Feed Water, Heating of 428
Locomotive Frame Pedestals, Underwood Portable Facing Machine for 563
Locomotive Guide Bars for Lateral Wear, Lining. M. H. Westbrook 468
Locomotive, Remarkable Performance of a Steam..... 90
Locomotive Rods, Boring. M. H. Westbrook 42
Locomotive, Tests Comparing 6- and 8-wheel Coupled Freight Engines with 4-Cylinder Double Bogie Mallet Type 596
Locomotive Weighing Machine 157
Locomotives, Liquid Fuel for. 90
Locomotives on American Railroads, Number of..... 307
Lodge & Shipley Mch. Tool Co.:
Deep Drilling Attachment for the Lathe..... 117
Roller Follower Rest..... 117
Portable Lathe 723
Loew Mfg. Co.:
Improved Victor Pipe-Threading Machine 657
Löf, E. A.:
Pole Piece Design for Dynamos 586
London New Tube Railway... 26
"Long Arm" System Co.:
Milling Machine Attachment for Chamfering Transmission Gear Teeth 489
Long Island R.R., Peculiar Accident on the..... 870
Look Forward 379
Loose Pulley, Johnson & Bassett Self-Oiling 58
Loose Pulley, The Drop Face Flanged 24
Loose Pulleys which are Inaccessible for Ordinary Oiling Devices, Device for Oiling. Moritz Kroll..... 632
"Lotherium," Discovery of a New Metal 380
Lubricant for Aluminum Cutting. A. A. Stevenson..... 551
Lubricant for Cutting Aluminum. Gregor 179
Lubricant for Fitting Aluminum Threads. Sregor.... 551
Lubricant for Turning Copper. S. H. Sweet..... 179
Lubricating Qualities of Oil, Apparatus for Testing the. 535
Lubrication, Friction and.... 537
Lubricated Bearings, The Importance of Well..... 775
Lucas, J. L.:
Matt Dip for Brass..... 551
Lucas Mch. Tool Co.:
Horizontal Boring, Drilling and Milling Machine 814, 898
Lusitania Breaks All Atlantic Speed Records 156
Lusitania, Day's Run Record Established by the..... 789
Lusitania, Results of Experimental Trials with..... 26
Lusitania, The 126
Lusitania, The Performance of the 201

Machine Building, Japan's Advance in 786
Machine Design, Unit System of 154
Machine Frames, The Designing of. E. A. Fessenden... 840
Machine Screws, Standard Proportions for 236
Machine Shop Practice:
Machining a Fixture Casting.
1 623
2 718
Grinding a Gear-Cutter.... 808
Re-planing a Locomotive Driving Box 878
Machine Shop Proverbs..... 600
Machine Shops, Heating and Ventilation of. Chas. L. Hubbard 1
Machine Tool, A Remarkable. 367
Machine Tool Competition, Foreign 696
Machine Tool Design, Simplicity in. W. T. Sears... 869
Machine Tool Trade, The French 154
Machine Tools, Barr's Rules for Powering 365
Machine Tools, Definition of. 717
Machine Tools, Filling and Painting. H. J. Huddleston 507
Machine Tools in Europe, American 161
Machine Tools, Imitations of American. David R. Millington 399
Machine Tools in Germany, The Manufacture of..... 616
Machine Tools in Great Britain, Large Use of American 232
Machine Tools, Motor Driven 154
Machine Tools, Pirating Special 379
Machine Tools, Reliability of Motor Drives for..... 680
Machine Tools, Some British. Jas. Vose 148
Machinery and its Future Development, Modern 159
Machinery and Supply Convention 749
Machinery Club, New York... 420
Machinery Club of New York, Opening of the..... 749
Machinery Club, The..... 663
Machinery, Fine Finish on... 453
Machinery Fitted to British Steamship in Record-Breaking Time 232
Machinery Foundations, Erecting. J. A. Pratt.... 240
Machinery House in Rotterdam, Handsome 463
Machinery in China, Demand for 454
MACHINERY of Permanent Value, To Make..... 230
Machinery Swindler on the Pacific Coast 907
Machining a Fixture Casting.
1 623
2 718
Machining Change Gears. Racquet 546
Machinists, Technical Education for. F. Walsleben.... 630
Magnalium 760
Magnet Coils with Bare Wire, System of Winding..... 455
Magnet, Cutler-Hammer Lifting 51
Magnetism, Time in which it Escapes from Electro-Magnet After Circuit is Broken 26
Mails, Railroads Fined for Late Delivery of..... 308
Makers of Small Tools Should Keep in Close Touch with Users..... 868
Mallet Type Locomotive, Tests Comparing 6- and 8-Wheel Coupled Freight Engines with 4-Cylinder Double Bogie 596
Mandrel Broken by Internal Stresses 176
Manganese Steel, New Use for 787
Manganese Used for Alloy Steels, Large Amount of... 450
Manning, Maxwell & Moore, Inc.:
Hendershot Shaft Coupling 416
Manufacture and Upkeep of Milling Cutters, Notes on the 457
Manufacturer, The Confidences of a..... 150

Manufacturers Helped Only by Reduced Freight Rates on Exports, German. Fairplay 471
Manville Mch. Co., E. J.:
Cam Cutting Machine..... 411
Marine Engine, Scraping Out the Cylinder of a..... 22
Marine Vessel Construction, Brass for 6
Markham, E. R.:
Can a Boy Learn a Trade in a School?..... 505
Pack-Hardening Gages..... 719
Evening School of Trades—Rindge Manual Training School, Cambridge, Mass. 793
Mars:
The Confidences of a Workman 628
Marsh, R. H.:
Center Used when Facing the Ends of Work..... 470
Marshall, J. L.:
Micrometer Stop for the Lathe 400
Martin, Jr. (Chas. W.), Obituary of 421
Masonry Arch in the World, Second Largest 786
Mathematics and Practical Experience 697
Mathematics in Massachusetts Institute of Technology, New Method of Teaching 680
Matt Dip for Brass. J. L. Lucas 551
Matthews, Chas. P., Obituary of 344
Mauretania, High Speed Attained by 232
Mauretania, Highest Speed Attained by 613
Mauretania, The 272
Mauretania's Trip on Three Propellers 792
Maximum Stresses. John S. Myers:
1 425
2 617
3 790
Mayer & Schmidt:
Automatic Cylinder Grinder 332
Mayhew, Robert:
Making a Sleeve With an Accurate Keyway 469
McCaslin, H. J.:
Obtaining the Pitch of a Propeller 172
McDonald, S. A.:
Slotting Fixture for a Hand Miller 173
Inserted Tooth Milling Cutter 250
Punch Press Forming Job. 467
Taper Turning Kink..... 716
McLaren, W. A.:
Turning the Wrist Pin of a Cross-head 251
Tool for Turning Hard Bronze Castings 707
McLeod, John:
Oiling Centers 326
Difficult Planing Job 521
Substitute for Steady Rest 673
Cutting off Steel Shafts.. 715
Measuring Screw Thread Diameters. Walter Cantelo.. 33
Measuring Wheel, Jones Dial 562
M. E. Canek:
Piping an Air Gage..... 86
Demonstrating an Invention 168
Rust-Preventing Mixture.. 179
The Lady Manager and the Fly-Wheel Bid..... 521
To Test White Lead..... 551
Mechanic in Europe, An American. Oskar Kylin:
1 577
2 660
3 746
4 829
5 908
Mechanics Mch. Co:
Milling Square Threads and Turning Pulleys on a Drill Press..... 774
Compound Table for Upright Drill Press..... 817
Medals for Safety Devices, Award of Three Gold.... 836
Melvin & Hamaker:
Multiple Tool Boring Head 192
Improved Adjustable Boring Head 575
Menegus, J. M.:
To Clean Rusty Pieces of Steel 179
To Join Together Two Pieces of Iron that Cannot be Heated..... 179
To Unite Metals of Any Kind 179
Investigating Adulterations in Belts and Leather... 179
To Prevent Screws from Getting Rusty 551
Merchant & Evans Co.:
Hele-Shaw Clutch 650
Metal and Rawhide Pinions for Motor Drive..... 93
Metal Brake Beams, Reclaiming Old. E. W. Bowen.... 111
Metal "Lotherium," Discovery of a New..... 380
Metal Sawing Machine, Cochrane-Bly 187
Metal-Working Planer, Gigantic 291
Metals, Galling of. W. S. Leonard 253
Metals of Any Kind, To Unite. J. M. Menegus.... 179
Metals Under Pressure, Casting 309
Metals With a Paint Brush, Plating 441
Metropolitan Life's Additional Tower..... 698
Meyer, N.:
R. S.'s Perpetual Motion Exposed 46
Meyer, Obituary of George J. 580
Miami Valley Mch. Tool Co.:
Improved 13½-Inch Engine Lathe 489
Michael, Wm. C.:
Addition and Subtraction on the Slide Rule..... 106
Micrometer Adjustable Reamer, Smith 484
Micrometer Attachment for Reading Ten-Thousandths. P. L. Yorgensen 399
Micrometer, Direct Fractional Reading. Chas. A. Kelley. 628
Micrometer for Setting Calipers, Inside. Sirius 49
Micrometer Frame. Sirius.. 112
Micrometer, Radius 56
Micrometer Scale. Wm. Ainscough 633
Micrometer Stop for the Lathe. J. L. Marshall.... 400
Micrometer, The Starrett Quick-Adjusting 60
Middle Ordinate of an Arc, Obtaining the Height of the. H. S. Quackenbush.. 886
Middle Ordinate of an Arc, Rules for Obtaining the Height of the 470
Mill, Gisholt Boring and Turning 265
Mill, Selecting Cutter for Concave. H. K. Harring. 708
Mill, Selecting Cutter for Fluting Concave 477
Miller, Fred J.:
Weights Not the Equivalents of Springs..... 467
Miller, Heavy Spiral Cutting on the Milwaukee 463
Miller, Horizontal Milling Attachment for Vertical.... 644
Miller, L.:
Aluminum Solder 551
Miller, No. 1 Dalin..... 53
Miller, Motor Drive for the Fox Light 811
Miller, Slotting Fixture for a Hand. S. A. McDonald. 173
Miller With Column, Chicago Bench 407
Milling and Drilling Fixtures for Offset Rod. Pedro 797
Milling and Indexing Attachment, Kempsmith Horizontal Circular 825
Milling and Planing, The Relative Value of..... 31
Milling Attachment for the Lathe. Ethan Viall..... 544
Milling Attachment for Vertical Miller, Horizontal... 644
Milling Attachment, Home-Made Universal. S. B. Welcome 174
Milling Attachment to Garvin Milling Machine, Automatic Slot 731
Milling Attachment, Vertical Double Spindle 738
Milling Cutter, A Broken... 175
Milling Cutter in Cutting Hard Materials, Advantage of High-Speed Steel..... 534
Milling Cutter, Improved Inserted Blade 27
Milling Cutter, Inserted Tooth. S. A. McDonald.. 250
Milling Cutters, Interlocked Formed 785
Milling Cutters, Fixture for Grinding Angular. P. Yorgensen 323
Milling Cutters, High Speed Steel for 453
Milling Cutters Increased by Use of Distilled Water as Lubricant, Life of..... 454
Milling Cutters, Notes on the Manufacture and Up-Keep of 457
Milling Cutters, The Effect of Distilled Water on Life of. F. Carnegie 708
Milling End Mills and Clutches, Formulas for. Irving Banwell 397
Milling Fixture for Finishing Gear Segments. W. Alton 395
Milling Machine Attachment for Chamfering Transmission Gear Teeth 489
Milling Machine, Brown & Sharpe No. 3 Vertical.... 180
Milling Machine, Combined Automatic Vertical and Horizontal Feed on a Vertical 382
Milling Machine, Cutting Long Lead Screws on the Thread 860
Milling Machine, Double Spindle Spline 907
Milling Machine, Doubling the Capacity of the. John Edgar 319
Milling Machine, Fosdick Boring, Drilling and..... 54
Milling Machine, Hamilton No. 3 Horizontal Drilling, Boring and 417
Milling Machine, Improved Driving Plate for the. Ethan Viall 797
Milling Machine, Ingersoll Column Type Combined Horizontal and Vertical Spindle 721
Milling Machine, Kearney & Trecker Universal 893
Milling Machine, Lucas Horizontal Boring, Drilling and 814
Milling Machine, Lucas Horizontal Boring, Drilling and 898
Milling Machine Output..... 95
Milling Machine of the Planer Type, Special Horizontal Spindle 907
Milling Machine Patent, The Universal 18
Milling Machine, Sloan & Chase Precision Bench.... 641
Milling Machine, Testing the Dividing Head of the Cincinnati 315
Milling Machine, Van Norman Plain 409
Milling Machine When Cutting Spirals, Change Gears for 717
Milling Machine With Horizontal, Vertical and Angular Spindles, Ingersoll.... 417
Milling Machine With Supplementary Vertical Spindles, Ingersoll Horizontal. 482
Milling Machines, Alignment Tests of Le Blond 669
Milling Machines' Many Uses, Universal 672
Milling Machines, Modern German. Oskar Kylin.... 892
Milling Machines, Motor Drive Mechanisms for Le Blond Lathes and 403
Milling Machines, Power Required for 29
Milling on the Lathe. E. R. Seiter 178
Milling Operations on Vise Parts. John Edgar..... 302
Milling Spiral Gears. Kearney & Trecker Three-Spindle Attachment for 817
Milling Square Threads and Turning Pulleys on a Drill Press 774
Millington, David R.:
Imitations of American Machine Tools 399
Mills, Jas. Cooke:
Four 4,000 H.P. Gas Engines 278
Millwright:
Simple Pattern Shop Tool 48
Milwaukee Mch. Tool Co. 16-Inch Lathe 741
Milwaukee to Use Automobiles Entirely for Municipal Purposes 786
Mining Construction, Reinforced Concrete Beam as a Substitute for Wood in... 786
Misnomers in Common Use.. 317
Misplaced Economy, An Example of. T. O. Olmaker. 474
Mitchell, R. H.:
Multiple Thread Cutting on the Engine Lathe..... 326
Modern Machinery and Its Future Development 159
Moisture on Wood, Effect of. 68
Moline Tool Co.:
Spur Gear Hobbing Machine 902
Monahan, G. F.:
To Prevent Lead Pencil from Breaking 49
Money and Money-Making Machinery. Claude E. Holgate 347
"Money-Back" System, The. Entropy 110
Money, Engineers Taught to Give Honest Work for Their 839
Money Moving, Keep 373
Monkey Wrench, Ratchet... 337
Monnet & Moyne Machine for Bending Tubing 609
Monrad, A. L.:
Making Thread Gages 387
Morin, Einar:
Jigs and Fixtures—
1 517
2 621
3 689
4 775
5 857
Morris Fdry. Co., John B.:
Schellenbach 16-inch Geared Head Lathe 741
Mossberg Wrench Co.:
Pulley Crowning Attachment for Lathes..... 485
Motor, Adams-Farwell Aeronautic, Gasoline 758
Motor Car Cylinder Boring, Tools for. Borer..... 45
Motor Car Displacing Horse-drawn Vehicles for Public Transportation 698
Motor Car Industry Falling Off, Inventive Activity in 870
Motor Car Trade in Germany for 1907 879
Motor Cars, Alcohol Instead of Petrol Used as Fuel for. 380
Motor Cars and Omnibuses, Expense of Repairs on.... 870
Motor Cars, Grooved Shafts for 611
Motor Cars, Reliability of... 314
Motor, Coffield Water 575
Motor Drive Arrangement for Wells Grinder 576
Motor Drive for the Fox Light Miller 811
Motor Drive Mechanisms for LeBlond Lathes and Milling Machines..... 403
Motor Drive of the Acme Automatic Multiple Spindle Screw Machine 738
Motor-Driven Grinding Machine, Norton 903
Motor-Driven Machine Tools. 154
Motor-Driven Planers, On Determining Size of Flywheels for. W. Owen.... 224
Motor Drive, Metal and Raw Hide Pinions for..... 93
Motor Drives for Machine Tools, Reliability of..... 680
Motor Fire Engine Outfit, Berlin's Appropriation for. 698
Motor for Machine Driving, General Electric Single-Phase 261
Motor for Rolling Mill Service 829
Motor Grinder, Lippincott Water 263
Motor Horse-Power in Electric Drive Installations, Ratio of Generator Capacity to 158
Motor, New Type of Variable Speed 153
Motor Record, A New..... 613
Motors for Crane 16-Spindle Drill, Variable Speed.... 205
Motors, Sturtevant Two, Four and Eight-Pole..... 198
Motors, Westinghouse Type "S A" Machine Tool..... 821
Moulton, LeRoy K.:
Method of Planing an Odd-Shaped Casting 715
Mountain Railway, A Recently-Completed Steep.... 428
Moving a Shop. B. Hardie.. 304
Moving Picture Industry, Growth of 577
Moving Picture Industry, Proportions of 616
Mueller Mch. Tool Co., New Shop of the 298
Mueller Mch. Tool Co.:
Automatic Feed-Plate Drilling Attachment 466
Multi-Spindle Drill with the Axes of the Drill Spindles Arranged Radially 153
Multiple Drilling Machine, Andrew 193
Multiple Piercing Tool. Chas. Petijean 802
Multiple-Spindle Automatic Screw Machine, Gridley... 401
Multiple Spindle Drill, Western High Speed..... 187
Multiple Spindle Drilling Device 252
Multiple Tool Boring Head. 192
Multiple Thread Cutting on the Engine Lathe. R. H. Mitchell 326
Mummert, Wolf & Dixon:
Revolving Oilstone Scraper Sharpener 561
Municipal Accounts, Over-Charges in 225
Murchey Mch. & Tool Co.:
Special Grinder for Pipe Threading Dies and Cutter Disks 188
Double Combination Tapping and Reaming Attachment 484
Revolving Chuck for Drilling and Tapping..... 561
Mutual Mch. Co.:
Universal Joint 646
Myers, John S.:
Formulas for Force Required to Move Crane Trolleys 99
Maximum Stresses
1 425
2 617
3 790

National Acme Mfg. Co.:
Motor Drive for the Acme Automatic Multiple Spindle Screw Machine..... 738
National Automatic Tool Co.:
Five-Way Drilling Machine 658
National Machine Tool Builders' Association, Annual Convention of the..... 126
National Machine Tool Builders' Association, Spring Meeting of the..... 750
National Machine Tool Builders' Convention 204
National Machine Tool Builders' Convention, Notice of the 476
National Mch. Tool Co.:
Drill Press of Novel Design 334

National Society for the Promotion of Industrial Education 497
Natural Resources, Conservation of 664
Natural Resources, Work of the U. S. Geological Survey in Conserving..... 911
Needle Points for Carburetors, Turning and Threading. J. D. Coe..... 400
New Britain Mch. Co.:
Portable Vise Stand..... 260
Bench Drawer 899
New Haven Mfg. Co.:
New Line of Heavy Lathes 415
New, S. S:
Correcting Perspective in Shop Photography 367
Newton Mch. Tool Wks.:
Double Cold Saw Cutting-Off Machine 121
Gear Hobbing Machine... 262
Combination Cold Saw Cutting-Off Machine 269
Cylinder and Valve Chamber Boring Machine.... 896
Nichols, Arthur:
Facing Work on Centers.. 178
A Handy Boring Bar..... 325
Nickel, Results of Tests Made With Cast Iron Containing 26
Nickel Steel. E. F. Lake.. 34
Niles-Bement-Pond Co.:
Gigantic Metal-Working Planer 291
Large Special Pond Lathe. 407
30-inch Turning and Boring Mill 818
Nitrogen in Case-Hardening, The Importance of..... 157
No Admittance Signs..... 83
Non-Productive Labor, Economy of 533
Northern Engineering Wks.:
Electric Chain Block..... 740
Norton, E. W.:
Fixture for Grinding Pistons 798
Spring Chuck Block..... 802
Norton Grinding Co.:
Small Norton Grinding Machine 333
Motor-Driven Grinding Machine 903
Notation for Engineering Formulas, Standard 380
Notation for Engineering Formulas, Standard 508
Notching Machine, Zeh & Hahnemann Armature ... 268
Novo and Blue Chip Steel, Annealing. P. W. Abbott. 178
Nut, Simple Form of Lock... 695
Nut, The Position of the Check. Geo. P. Pearce... 107
Nuts, Casting Threaded Holes in Wrought Iron..... 586
Nuts, Dimensions of Screw Heads and 876
Nuts for Flexible Staybolts, Making 712
Nuttall Co., R. D.:
Flexible Insulated Coupling 735

Oberg, Erik:
Reamers,
2 14
3 84
4 146
5 226
Testing the Lead of Taps and Screws 317
Screw Thread Systems.... 371
Taper Taps—
1 442
2 524
Special and Adjustable Taps 779
Obsolete Tools in Machine Tool Shops 784
Ocean Liners, Highest Speed Attained by 232
Ocean Liners, Income from Fast 444
Ocean Liners, Vibration of Machinery on 91
Offset Levers, Laying Out. E. R. Seiter 250
Offset Rod, Milling and Drilling Fixture for. Pedro 797
Oil, Apparatus for Testing the Lubricating Qualities of 535
Oil and Waste Saving Mch. Co.:
Steam Turbine Driven Oil Extractor for Chips.... 730
Oil-Burning Apparatus to be Installed on Torpedo Boat Destroyers 768
Oil Engine, De La Vergne Two-Cycle Vertical 115
Oil Engine, Novel High Compression. Alfred Gradenwitz 5
Oil Extractor for Chips, Steam Turbine Driven.... 730
Oil for Fuel for Steam-Raising Purposes 309
Oil Grooving Machine, Fischer 196
Oil, Rifled Pipe Lines for Conveying 79
Oil Storage System, Fuel. E. Falkenrath 714
Oil Tank, Concrete..... 867
Oil Tempering Furnace..... 829
Oiling Centers. John McLeod 326
Oiling Loose Pulleys Which are Inaccessible for Ordinary Oiling Devices, Device for. Moritz Kroll 632
Oiling Machinery, Self-..... 784
Oiling Machinery, Self-, A. L. De Leeuw..... 886
Oliver, S.:
Pump Vise Jaws..... 42
Automatic Stop for Drill Press 175
Oilstone Scraper Sharpener, Revolving 561
Oilstones, Method of Truing Up. J. J. Voelcker..... 399
Oliver, Obituary of James H. 580
Olson, Carl:
Grinding and Grinding Machines 526
Olympia Exhibition, Notes from the. James Vose... 222
Operatives in a High State of Efficiency, Necessity of Keeping 778
Order Tracing System, Shop. Chas. M. Pond..... 692
Ordinate of an Arc, To Obtain the Height of the Middle 255
Organizer, A Bad..... 697
Original:
Holder for Turning End of Handles 112
Outing, MACHINERY'S Annual 204
Overload, The Breakable Part as a Prevention for..... 22
Over-Supply of Technically-Educated People in Germany 522
Overtime, A Case of Misdirected Energy 612
Owen, W.:
On Determining the Size of Fly-wheels for Motor-Driven Planers 224

Pack-Hardening Gages. E. R. Markham 719
Page, Julian D.:
To Make a Water-Tight Joint 551
Method of Leveling a Line-Shaft 885
Painter, William A.:
Local Hardening and Tempering 853
Painting Galvanized Iron... 516
Painting Machine Tools, Filling and. H. J. Huddleston 507
Panama Canal, Equipment of Machinists Going to Work on 123
Paper Kettles for German Soldiers 204
Paper Pinions, Compressed.. 308
Parcels Post, Objections to.. 376
Paris to Construct Canal to Sea 26
Parting Sand, Molders'..... 71
Patch, A Dumb-Bell. Donald A. Hampson..... 716
Patching Drawings 85
Patent Law, Restrictions of New British 233
Patent Office, On the State of the. H. Addison Johnston 449
Patent Rights, An Aspect of. 532
Patent Rights in Technical Descriptions 887
Patent, The Universal Milling Machine 18
Patents and Inventors. E. C. Smith 684
Patents and Inventors. H. Addison Johnston 889
Patents, Cost of..... 242
Pattern-Maker:
Tool for Shaping Wax Fillets 49
Pattern Shop Tool, Simple. Millwright 48
Patterns, Applying Leather Fillets to. J. W. Wolfenden 633
Patterson Tool & Supply Co.:
Commutator Truing Device 57
Coffield Water Motor..... 575
Pearce, Geo. P.:
The Position of the Check Nut 107
Increasing the Boiler Capacity 152
The Burglar and the Safe-Maker 244
Pease Blue-print Mchy. & Supply Co., C. F.:
Blue-print Cutting, Trimming and Sizing Table.. 123
Automatic Electric Blue-print Machine 491
Pedestals, Underwood Portable Facing Machine for Locomotive Frame 563
Pedro:
Milling and Drilling Fixture for Offset Rod.... 797
Peirce, F. R.:
Ball Bearing Cone Centers. 550
Pelton, Obituary of Lester A. 664A
Penney, H. D.:
Shading Drawings 471
Pennsylvania:
Economy without Discretion 41
Saw Arbors 108
Pennsylvania R.R.'s New Passenger Terminal 308
Pennsylvania Railroad's Presidents 856
Perpetual Motion Advertisements, A Masterpiece Among 706
Perpetual Motion Exposed, R. S.'s. N. Meyer..... 46
Perrigo, Oscar E.:
Examining and Testing Files 77
Perry, R. P.:
Silver White Bronze 179
Personal:
64, 126, 205, 273, 342, 421
497, 579, 664A, 751, 834, 911
Personnel of Workmen, The. 785
Perspective in Shop Photography, Correcting. S. S. New 367
Peters, Ulrich:
Power Required for Cranes and Hoists 161
Derivation of the Cross-roll Curve 214
Design of Rotating Drums 275
Petijean, Chas.:
Multiple Piercing Tool.... 802
Petroleum into Germany, Increase of Imports of Austrian 613
Phosphor-bronze 788
Phosphor-bronze Springs, Securing Uniformity in..... 27
Phosphorus in a Phosphor-bronze Bearing, Effect of Too Much 13
Photography, Correcting Perspective in Shop. S. S. New 367
Photographing Drawings 70
Photographing Machines with Bright Polished Surfaces.. 309
Photographs by Electricity, Successful Transmission of. 90
Photographs, Electric Transmission of 614
Photographs for Illustration. 24
Photography, Shop. Carl S. Dow 215
Picric Acid as a Remedy for Burns 100
Piercing Tool, Multiple. Chas. Petijean 802
Pinions, Compressed Paper.. 308
Pinions for Motor Drive, Metal and Raw Hide..... 93
Pins from Bar Stock in the Gisholt Turret Lathe, Making Cross-head 705
Pipe and Fittings Wrench, "Agrippa" 60
Pipe Bending Machine, Underwood Pneumatic 338
Pipe Bending Machine, Stoever Automatic 57
Pipe Bends. Wm. F. Fischer. 702
Pipe by Heating with Oil Burner, Bending Large Steel 613
Pipe Cutter, Pneumatic Tube and 30
Pipe Fittings, Bursting Strength of Malleable Iron. 455
Pipe Fittings, Depth of Thread in 113
Pipe Lines for Conveying Oil, Rifled 79
Pipe Nipple Machine, Novel.. 507
Pipe Threading and Cutting-off Machine, Improvement in Williams' 907
Pipe Threading Die Stock, Hoefer 192
Pipe Threading Dies and Cutter Disks, Special Grinder for 188
Pipe Threading Machine, Stoever Lever 52
Pipe Threading Machine, The Loew Improved Victor.... 657
Pipe while Threading, Holding Large. Sirius 178
Pipe Wrench, Quick Adjustment 783
Piping an Air Gage. M. E. Canek 86
Pirating. A. A. Andrews.... 548
Pirating Special Machine Tools 379
Piston Ring Disk Grinder, Besly 820
Piston Rings, Fixture for Grinding. E. W. Norton.. 798
Piston Rings, Making. Y. Ziegler 629
Piston Rings on the Libby Turret Lathe, Finishing Fly-wheels, Hoist Drums and 805
Pistons and Piston Rings on the Gisholt Turret Lathe, Finishing 475
Pitch and Lead, Distinction between 113
Pitch of a Propeller, Obtaining the. H. J. McCaslin... 172
Pittsburg Vise of Unusual Size 58
Planer, A Power Producing. Grebo 686
Planer, Chandler Clutch-driven 329
Planer Chuck. L. N. Gillis.. 545
Planer Clamp, Correction to Description of 339
Planer Clamp, Williams Drop Forged 264
Planer, Clamping Appliances for the 804
Planer Dog, Handy..... 254
Planer for Fluting Feed Rolls, Woodward & Powell..... 652
Planer, Gigantic Metal-working 291
Planer, Graduating on the. D. A. Hampson 396
Planer, How a Large Casting was Planed on a Small... 301
Planer, Improvements in the Chandler 261
Planer of English Design, A Large 861
Planer Platens, Bearings for. 891
Planer, Rockford Heavy Pattern 414
Planer Type Suggested, An Alternative 710
Planer, Variable Speed Drive for the Woodward & Powell 818
Planers, Adjustable Leveling Blocks for 778
Planers, Economy of High-speed 700
Planers, Fly-wheel for..... 151
Planers, On Determining the Size of Fly-wheels for Motor-driven. W. Owen.. 224
Planimeter, Pocket Knife.... 43
Planing an Odd-shaped Casting, Method of. LeRoy K. Moulton 715
Planing Concave Tapers, Fixture for. J. F. A. Vogt... 48
Planing Job, Difficult. John McLeod 521
Planing, The Relative Value of Milling and 31
Planing Wide Work, Extension Arms for. W. S. Leonard 887
Plantinga, Peter:
Constants for Finding Speeds of Drills 473
Plants and Operatives in High State of Efficiency, Necessity of Keeping 778
Platens, Bearings for Planer. 891
Plating Metals by Means of Paint-brush 441
Plating, Solution for. M. B. Stauffer 113
Platinum, Recent Discoveries of 308
Plodder:
Notes on Centering..... 470
Pneumatic Dolly. M. H. Westbrook 324
Pneumatic Pipe Bending Machine, Underwood 338
Pneumatic Plant, Saving Effected by 150
Pneumatic Press, Springfield. 905
Pneumatic Tools over Hand Labor for Chipping, Calking, etc., Advantages of... 314
Pneumatic Tube and Pipe Cutter 30
Poisoning through Gas Engines 308
Pole Piece Design for Dynamos. E. A. Löf 586
Polygon, Calculating the Side of an Inscribed. Fred Walsleben 553
Polygon, To Calculate the Side of an Inscribed. Robert Grimshaw 398
Pond, Chas. M.:
Shop Order Tracing System 692
Portable Drill, Simple..... 633
Portable Lathe, Lodge & Shipley 723
Portable Universal Grinder, "Lektro" 331
Porter, R. C.:
Turning a 76-inch Pulley on a 60-inch Boring Mill. 244
Portfolio, Draftsman's. Geo. William Bohler 709
Post, Objections to Parcels... 376
Postage for Reply when Writing to Germany, Suggestion that American Business Men Send 232
Postage Rates, Foreign Letter 126
Postage Stamps, International 90
Potato-rasping Machine..... 87
Potter & Johnston Mch. Co.:
The Setting Up and Operation of the Potter & Johnston Automatic Chucking Machine.
1 555
2 605
Long Travel Chucking Machine 571
Six-inch Automatic Chucking Machine 809
Power, A New Means of Transmission of 381
Power Contract between New York City and New York Edison Co. 454
Power Hack Saw giving Relief on the Return Stroke. 335
Power Hammer, Dayton..... 647
Power Head for Drilling and Reaming Holes, Right-angle. T. B. Burnite..... 396
Power House to be Operated by Tidal Movement of the Sea 706
Power House, Unusual..... 98
Power Plants, Growing Favor of Small Producer 870
Power Press, Large Open Back Single Pitman Gap... 338
Power Press, Standard Machinery Co.'s Light..... 642

Power-producing Planer, A. Grebo 686
Power Production, The Cost of 91
Power Production, Unique Means for 100
Power Required for Cranes and Hoists. Ulrich Peters. 161
Power Required for Milling Machines 29
Power Station using Highest Head of Water in World, Hydro-electric 870
Power Stations in Lapland, Building of Large 870
Power Transmission by Friction Drive 352
Power Transmission, Tests to Ascertain Relative Efficiencies of Belts and Chains for 907
Powering Machine Tools, Barr's Rules for 365
Powers, Comparative Costs of Gasoline, Gas, Steam and Electricity for Small 97
Practical Ideas from an Advertising Manager 664
Pratt, J. A.:
Erecting Machinery Foundations 240
Pratt & Whitney Co.:
Concrete Foundations for Drop Hammers 542
Adjustable Leveling Blocks for Planers 778
Cutting Long Lead Screws on the Thread Milling Machine 860
Double Spindle Spline Milling Machine 907
Pratt & Whitney Co.'s Shops, Jigs and Fixtures in 437
Precision Gear Cutting Machine, Waltham Automatic. 744
Precision Grinding 29
Premium Work Always Pay? Does. W. Alton 884
Prentice Double Head Multiple Spindle Automatic Turret Machine 194
Preparation of Engineering Articles and Technical Papers 30
Preservation of Ties by Crude Oil 308
Preserving the Forests 698
Presidents, Pennsylvania Railroads 856
Press, A. P.:
Sam and His Hack Saw Machine 866
Press, Bliss Automatic Gang. 639
Press, Bliss Double Crank ... 200
Press, Combination Foot and Power 266
Press, Ferracute Single-crank 329
Press Fitted with Stagger Feed, Bliss 729
Press for Cutting Paper Blanks, Foot 828
Press for Heavy Cutting, Ferracute 189
Press, Heavy Toledo Straight Sided 197
Press, Large Open Back Single Pitman Gap Power 338
Press of Unusual Size, Bliss Single Crank 266
Press of Unusual Size, Toledo Toggle Action Drawing 487
Press, Springfield Pneumatic. 905
Press, Standard Machinery Co.'s Light Power 642
Press, Toledo Double Pitman Gang 906
Press, Turret Bench 907
Press with Double Die Attachment, Inclined Bliss 567
Pressures, Connections for High 134
Pressure Gages, Some High .. 380
Price, J.:
Obtaining Angular Movements with the Indexing Head 323
Prick Punch, Center. Trixie 173
Printing Wheels, Securing Rubber Type Bands to Hexagonal Brass 706
Problem for Engine Designers, A Practical 694
Producer Power Plants, Growing Favor of Small 870
Production, The Economical Limit of Increased 868
Productive Labor, Drafting as 868
Propellor by *Mauretania*, Loss of 792
Propellor, Laying Out a. J. S. Watts 17
Propellor, Laying Out a 272
Propellor, Obtaining the Pitch of a. H. J. McCaslin 172
Proportions for Machine Screws, Standard 236
Propulsion, Failure of Jet ... 451
Prosecutions Relating to Violation of Safety Appliance Law 156
Prosperity during 1906, Cincinnati's Condition of 152
Protractor above the Surface of the Drawing, Raising Draftsman's. M. R. Kavanagh 326
Proverbs, Machine Shop 600
Publication, On Writing Descriptions of Tools for 370
Pulley Balancing Device. Allan 882
Pulley Crowning Attachment for Lathes, Mossberg 485
Pulley for High Speed Light and Noiseless Service, Chain Belt and Adjustable 745
Pulley on a 60-inch Boring Mill, Turning a 76-inch. R. C. Porter 244
Pulley on a Shaft, To Loosen 113
Pulley, The Drop Face Flanged Loose 24
Pulleys from Shafts, To Remove. H. K. Griggs 468
Pulleys, Notes on High Speed. Wm. Sangster 800
Pulleys on a Drill Press, Milling Square Threads and Turning 774
Pulleys, Special Lathe and Tool Equipment for Turning Cone. Wm. F. Groene. 464
Pulleys which are Inaccessible for Ordinary Oiling Devices, Device for Oiling Loose. Moritz Kroll 632
Pulleys which are Rusted Fast on their Shafts, To Loosen. 255
Pump Vise Jaws. S. Oliver .. 42
Pumping Engine, Bids for Vertical Triple Expansion Crank-and-Fly-wheel 390
Pumping Mechanisms for Hydraulic Jacks, Standardization of 441
Pumps for Deep Well Pumping, Centrifugal 92
Pumps for High-pressure Fire Mains, Electric 454
Pumps, Reserve Chamber for Priming. Tool Designer .. 798
Punch, A Toggle-joint. J. E. Washburn 393
Punch and Die for Armature Disks 41
Punch and Die for Armature Laminations, Hardening ... 295
Punch and Die for Blanking and Forming Copper Cups. 546
Punch, Center Prick. Trixie. 173
Punch Press Forming Job. S. A. McDonald 467
Putty, Making Pure 253

Quackenbush, H. S.:
Obtaining the Height of the Middle Ordinate of an Arc 886
Quebec Bridge Disaster 615
Queen City Mch. Tool Co.:
Quick Change Gear Drive for the Queen City Shaper 636
Quick Change Gear Drive for the Queen City Shaper 636

Racine Gas Engine Co.:
Power Hack Saw giving Relief on the Return Stroke 335
High Speed Automatic Hack Saw Machine 824
Rack Cutting Machine, Gould & Eberhardt 563
Rack Cutting Machine in the Shops of the R. K. LeBlond Machine Tool Co. 541
Rack for Change Gears. W. F. Groene 886
Racquet:
Machining Change Gears .. 546
Radial Drill, American Tool Works 2-foot 827
Radial Drill, Bickford Universal 195
Radial Drill, Hilbert 2½-foot 186
Radial Drill, Portable Electric 335
Radial Drill, Portable Electric 903
Radial Drilling Machine, New Sensitive 732
Radium Produced 339
Radius Micrometer 56
Rahn-Carpenter Co.:
16-inch Motor Driven Lathe 730
Railless Tramway 454
Ball-making Plants, New 155
Railroad Gazette and *Railway Age*, Consolidation of .. 752
Railroad near Completion, Cape Town to Cairo 870
Railroad Testing Laboratory, Union Pacific's 380
Rails, Rusting of Steel 156
Railroads, Experiments to Determine Best Method of Operating Electric 454
Railroads Fined for Late Delivery of Mails 308
Railway Bridges in Germany, Plain Concrete for 156
Railway Ferry between Sweden and Germany 380
Railway in London, New Tube 26
Railway Mileage, Statistics of 27
Railway, Recently Completed Steep Mountain 428
Railways, Electrification of San Francisco Suburban ... 156
Railways, Electrification of Swedish State 455
Railways in Bavaria, Utilization of Water Power for Electrification of 157
Railways, Preliminary Work Begun on Electrification of Swedish State 613
Ramsey, C. H.:
Securing the Ink Bottle ... 252
Babbitt Riveting Block 400
Ramsey (Chas.) Co.:
D'Amour Sensitive Drill Press 411
Ransom Mfg. Co.:
Motor-driven Tool Grinder. 899
Ratchet Drill, Armstrong Short 740
Ratchet Monkey-wrench 337
Rattek, F.:
Tool for Calipering Taper Tapped Holes 326
Block for Holding Taps and Tap Drills 400
Raw Hide Pinions for Motor Drives, Metal and 93
Reaction, The 88
Reading the Slide Rule Accurately. C. H. Cornes ... 885
Reamer, Operations in Manufacturing Smith's Adjustable 101
Reaming Attachment, Murchey Double Combination Tapping and 484
Reaming Machine, Currier ... 334
Reamer, Smith Micrometer Adjustable 484
Reamers, Erik Oberg:
2 14
3 84
4 146
5 226
Reamers, Grinding. F. P. Hebard 174
Reamers, Kelly Adjustable ... 814
Reaming a Taper Sleeve. W. H. Addis 326
Reaming and Tapping Machine, Special 640
Reaming in the Lathe, Drilling and. H. J. Bachmann. 467
Reason Why, A Poor 79
Reciprocating Engines for Steamer, Combination of Turbines and 123
Reclaiming Old Metal Brakebeams. E. W. Bowen 111
Recognition of Ability, The .. 452
Record of Useful Information, Importance of Keeping 448
Reference Series, MACHINERY'S 318
Reinforced Concrete as a Protection for War Vessels 534
Reinforced Concrete Beams as a Substitute for Wood in Mining Construction 786
Reinforced Concrete Boats ... 466
Reinforced Concrete Construction, Careful Designing Necessary for 306
Reinforced Concrete, Flywheels with Rims of 613
Reinforced Concrete, Test of. 534
Reliability of Motor Drives for Machine Tools 680
Renard Road Train, Efficiency of 871
Renkin, W. O.:
Device for Laying Out and Testing Keyways 450
Repair Gang, With the. A. P. Press 38
Repair of Steamship Stern Frame and Rudder Post, Thermit 228
Repairs on Motor Cars and Omnibuses, Expense of 870
Repairs on Turbine-driven and Reciprocating Engine Driven Vessels, Relative Cost of 380
Repairs to a Dynamo Engine on a Revenue Cutter 23
Re-planing a Locomotive Driving-box 878
Reserve Chamber for Priming Pumps. Tool Designer 798
Resistance of Soft Materials, The 23
Responsibility of Workmen, The Growing 453
Reversing Device, Conkling .. 900
Rhodes, L. E.:
12-inch Back-geared Crank Shaper 563
Ribbed Elbows in Stove Piping, etc., Machine for Forming 267
Richards, G. R.:
Grinding Fixture for End Measure Rods 884
Rifled Pipe Lines for Conveying Oil 79
Right-angle Drive for Dill Slotter 338
Right-angle Power Head for Drilling and Reaming Holes. T. B. Burnite 396
Rindge Manual Training School, Cambridge, Mass. E. R. Markham 793
Ring Grinder, Improved Saxon 574
Riveters, Some Late Improvements in Compressive 94
Riveting Block, Babbitt. C. H. Ramsey 400
Road Train, Efficiency of Renard 871
Rockford Drilling Mch. Co.:
Routing Machine for Keyslots in Spindles 408
Straightening Machine 488
Rockford Mch. & Shuttle Co.:
Sensitive Bench Drill 257
Sensitive Drill 744
Rockford Mch. Tool Co.:
Heavy Pattern Planer 414
Special Tools in the Rockford Machine Tool Co.'s Shop 772
Single Pulley Geared Drive Shaper 897
Rods, Boring Locomotive. M. H. Westbrook 42
Roels, Chas.:
A Belt Shifter 549
Simple Cost System for Small Shops 631
Roller Chain While Replacing Links, Device for Holding 657
Root of Numbers Using a Slide-rule for Obtaining Any. Hjalmar Fagerstrom 866
Rope Drive for Machine Tools 92
Rope Sheave, Large 856
Ross, K. L.:
Construction of Dies to Prevent Breakage in Hardening 42
Stop for Stock in Blanking and Progressive Dies. 254
Rotary Cutter, Cutting Bevel Gears with a. H. P. Fairfield 73
Rotating Cutting Tool in Proportion to the Working Pressure, Device for Adjusting the Feed of a 531
Rotating Drums, Design of. Ulrich Peters 275
Rotterdam, Handsome Machinery House in 463
Rotterdam's Maiden Trip 870
Roundhouse Built by Northern Pacific Railroad Co., Novel 242
Routing Machine for Keyslots in Spindle, The Rockford .. 408
R. S.'s Perpetual Motion Exposed. N. Meyer 46
Rubber Springs, Failure of .. 213
Rubber Type Bands to Hexagonal Brass Printing Wheels, Securing 706
Rule for Dividing, The Use of the Ordinary. Martin Joachimson 804
Rule Recessed into T-square Blade, Steel. John Coapman 716
Russian Government to Construct Double Track on Trans-Siberian Railroad .. 26
Rust-preventing Mixture. M. E. Canek 179
Rusting of Steel Rails 156
Rusting-out of Smoke-stack, Quick 707
Rusty Pieces of Steel, To Clean. J. M. Menegus 179
Rusty, To Prevent Screws from Getting. J. M. Menegus 551
R. W. Speed Variator Co.:
R. W. Speed Variator 262

Safeguard in Machinery. W. H. Booth 221
Safe-maker, The Burglar and the 83
Safe-maker, The Burglar and the. Geo. P. Pearce .. 244
Safety Appliance Law, Prosecutions Relating to Violation of 156
Safety Appliances, Beneficial Effect of 463
Safety Appliances in Coal Mining in United States, Lack of 787
Safety Appliances, Value of .. 88
Safety Devices, Award of Three Gold Medals for ... 836
Safety Devices, Exposition of 662
Safety Emery Wheel Co.:
Motor-driven Tool Grinder. 901
Safety Razor, An Illustration of the Cost of Selling Goods 70
Safety Slipping Device for Machinery 199
Sallows, J. F.:
Forging a Lathe Boring Tool 21
A Blacksmith's Drill Jig ... 108
Tempering Drop Forging Dies 320
The Collapsing of Hardened Tools 325
Shrinkage and Expansion of Steel in Hardening 800
Sam and His Hack Saw Machine. A. P. Press 866
Sand-lime Brick, Manufacture of 699
Sand, Molders' Parting 71
San Francisco Suburban Railways, Electrification of ... 156
Sangster, Wm.:
Notes on High-speed Pulleys 800
Sansom, W. J.:
Facing Concave Work in the Lathe 473
Saw Arbors, Pennsylvania .. 108
Saw, Burke Machinery Co.'s Cutting-off 728
Saw Cutting-off Machine, Newton Combination Cold 269
Saw for Small Work, Burr Motor-driven Cold 492

Saw, Lea Motor-driven Cold Metal 900
Saw, Motor-driven Cold..... 907
Saw-tooth Roof Shop Construction 698
Sawing Machine, Cochrane-Bly Metal 187
Sawyer, W. A.:
Ball Grinding Fixture..... 631
Saxon Mch. Co.:
Improved Ring Grinder... 574
Scale, Micrometer. Wm. Ainscough 633
Schellenbach-Hunt Tool Co.:
Angle Measuring Instrument 825
Schellenbach 16-inch Geared Head Lathe 741
Schilling, M.:
Drilling Clearance Holes in Solid Dies 177
Schmidt Drive Chain Co.:
Schmidt Driving Chain.... 260
School, Can a Boy Learn a Trade in a. E. R. Markham 505
School of Trades, Evening. E. R. Markham..... 793
Scott, C. U.:
Annealing High Speed Steel 173
Scott (Walter), Obituary of. 126
Scrap Metal, The Value of Old Valves for 27
Scraper Sharpener, Revolving Oilstone 561
Scraping Out the Cylinder of a Marine Engine 22
Scraping, Tools for. Sirius. 250
Screw Filing Jig, A. Raymond C. Williams..... 112
Screw for Drill Chuck, Method of Making. B. M. Weller 713
Screw Heads and Nuts, Dimensions of 876
Screw, How to Tighten a Loose 326
Screw Machine, Gridley Multiple Spindle Automatic... 401
Screw Machine, Improvements in the Universal Multiple Spindle Automatic 654
Screw Machine, Making Watch Parts in the Commercial Automatic 681
Screw Machine, Motor Drive for the Acme Automatic Multiple Spindle 738
Screw Machine, Smurr & Kamen Plain Head..... 745
Screw Machine, Stock Support for. A. B. Christman 49
Screw Machine, Wells..... 118
Screw Plate for Brazed Brass Tubing, Green River..... 483
Screw Slotting Fixture. F. R. Carstensen..... 43
Screw Slotting Hack Saws, Simonds 416
Screw Slotting Machine, Taylor & Fenn Automatic..... 655
Screw Slotting Machine, Waterbury-Farrel Automatic... 481
Screw Thread Diameters, Measuring. Walter Cantelo 33
Screw Thread Systems. Erik Oberg 371
Screw Threads, Stresses in.. 153
Screws from Getting Rusty, To Prevent. J. M. Menegus 551
Screws, Standard Proportions for Machine 236
Sea Water on Cement and Concrete, Action of 90
Sea Water on Concrete, Action of 379
Seaburg, Fred:
Cutting Triple Threads.... 248
Sealed Bonnet Automobile Contest, General Conclusions from the A. C. A.... 27
Sears, W. T.:
Simplicity in Machine Tool Design 869
Secrecy in the Arts..... 386
Secrecy not Advantageous to Trade 669
Section Liner, Draftsman's. C. A. Kelley..... 178
Seiter, E. R.:
Milling on the Lathe..... 178
Laying Out Offset Levers.. 250
Self-oiling Machinery 784
Self-oiling Machinery. A. L. DeLeeuw 886
Self-sustaining Winch 92
Sellers, Dr. Coleman, Obituary of..... 421
Sellers & Co., Inc., Wm.:
Improved Motor-driven Car Wheel Boring Mill..... 648
High Power Driving Wheel Lathe 733
Selling Goods, Cost of..... 70
Sensitive Bench Drill, Rockford 257
Sensitive Drill Press, Motor-driven Variable Speed..... 649
Sensitive Drill, Rockford Machine & Shuttle Co.'s..... 744
Setting Up and Operation of the Potter & Johnston Automatic Chucking Machine, The.
1 555
2. 605
Seven Years, On Keeping Things 306
Shading Drawings. H. D. Penney 471
Shafer, Obituary of Daniel.. 498
Shaft Coupling. Hendershot. 416
Shaft, Hahn Flexible 573
Shaft Straightener, Johnson & Bassett 259
Shaft-turning Machine 385
Shafting, Convenient Rule for Calculating Cold Rolled... 876
Shafts, Cutting-off Steel. John McLeod 715
Shafts, Device for Straightening. Testing Room..... 803
Shafts, Flexible. Geo. W. Armstrong 803
Shafts for Motor Cars, Grooved 611
Shailor, Frank E.:
Lapping Flat Work and Gage Jaws 139
Sheet Metal Drawing..... 882
Shaper, Cincinnati Open Side 55
Shaper, Down-feed for Stockbridge 193
Shaper, Flather Sixteen-inch Gear-driven 199
Shaper, Quick-change Gear Drive for the Queen City. 636
Shaper, Rhodes 12-inch Backgeared Crank 563
Shaper, Single Pulley Geared Drive, Rockford..... 897
Shaper, The Tool Room Versus the Machine Shop. William Ecker 782
Shaper, Walcott & Wood 20-inch Crank 822
Shapers, Front Cross Feed for Gould & Eberhardt..... 483
Sharpener, Revolving Oilstone Scraper 561
Sharpening Files, An Interesting Method of 534
Shaw, C.:
Belt Shifter 49
Sheave, Large Rope 856
Sheet Metal Drawing. Frank E. Shailor 882
Shepard Electric Hoist 336
Sherardizing or Dry Galvanizing 890
Shifter, A Belt. Chas Roels. 549
Shifter, German Type of Belt. 695
Shifting Two Belts with One Lever. William L. Ambler. 47
Ship to Come In, The Fellow Who Waits for His..... 836
Ship, 50-year Anniversary of the Steel 26
Ship-building Industry, Increase in United States'.. 380
Shipyards for 1907, Output of World's 530
Shop Forms, Uniformity in.. 307
Shop Lighting 252
Shop, Moving a. B. Hardie. 304
Shop Operation Sheet Idea, Development of 223
Shop Operation Sheets, The Extra Data and 88
Shop Order Tracing System. Chas. M. Pond 692
Shop Photography. Carl S. Dow 215
Shops for Growth, Building. 696
Shops of the Heald Machine Co., Notes from the New.. 597
Shrinkage of Wood..... 328
Shrink Fit, Using a Cannon for Dissociating 12
Shrinkage and Expansion of Steel in Hardening. J. F. Sallows 800
Sibley, F. H.:
Laying Out Cams for Rapid Motions 374
Side of an Inscribed Polygon, Calculating the. Fred Walsleben 553
Side of an Inscribed Polygon, To Calculate the. Robert Grimshaw 398
Sierra Nevadas, Contemplated Tunnel through the 870
Signs, No Admittance..... 83
Silicon, Some Interesting Facts about Alloys of..... 526
Silver White Bronze. R. P. Perry 179
Simonds, Clarence E.:
Facing Work on Centers... 111
Simonds File Co.:
Screw-slotting Hack-saws.. 416
Simplex Mfg. Co.:
Ratchet Monkey-wrench .. 337
Simplicity in Machine Tool Design. W. T. Sears..... 869
Simplon Tunnel, Curious Conditions brought About by Opening of 380
Singer Building, Tower of.. 90
Single Crank Press of Unusual Size, Bliss 266
Single-phase Motor for Machine Driving, General Electric 261
Sirius:
Inside Micrometer for Setting Calipers 49
Micrometer Frame 112
Holding Large Pipe while Threading 178
Tools for Scraping..... 250
Sketches so that Erasures are not Noticeable, To Make.. 864
Skinner Chuck Co.:
Geared Pattern Drill Chuck 645
Skyscraper, England's First. 786
Slag Ladle, Unique Bearing for End Tipping 530
Sleeve, Reaming a Taper. W. H. Addis 326
Sleeve with an Accurate Keyway, Making a. Robert Mayhew 469
Slide Rule Accurately, Reading the. C. H. Cornes.... 885
Slide Rule, Addition and Subtraction on the. Wm. C. Michael 106
Slide Rule for Obtaining any Root of Numbers, Using a. Hjalmar Fagerstrom..... 866
Slip of Belts, Apparatus for Measuring the. Moritz Kroll 627
Slipping Device for Machinery, Safety 199
Sloan & Chace Mfg. Co., Ltd.:
Precision Bench Milling Machine 641
Slotter, Right Angle Drive for Dill 338
Slotting Fixture for a Hand Miller. S. A. McDonald.. 173
Slotting Fixture, Screw. F. R. Carstensen 43
Slotting Machine, Automatic. 335
Slotting Machine, Taylor & Fenn Automatic Screw ... 655
Small Tools, Makers of, Should Keep in Close Touch with Users 868
Smart, Chas. E.:
Whitworth or English Taper Pipe Taps 713
Smith Counter-shaft Co.:
One-belt Reversible Countershaft 265
Smith, K. G.:
The Manufacture of Small Steam Turbines 363
Smith, E. C.:
Patents and Inventors..... 684
Smith Co., Wm. J.:
Operations in Manufacturing Smith's Adjustable Reamer 101
Micrometer Adjustable Reamer 484
Smokestack, Quick Rusting-Out of 707
Smurr & Kamen Mch. Co.:
Plain Head Screw Machine 745
Snyder, J. E., & Son:
Currier Reaming Machine.. 334
Snyder, J. E., & Son, New Shop of. H. P. Fairfield.. 243
Socket, Cleveland Double Tang Drill 642
Sockets, Cincinnati Permanent Tap 643
Soda Kettle, Gas or Oil Heated 259
Soft Materials, The Resistance of 23
Solder, Aluminum. L. Miller 551
Soldering Aluminum 864
Soldering, Electric 228
Spacing Bolt Holes, Tool for. 550
Spacing Collars, Boring and Turning. Chas. Thiel..... 247
Spanner Wrenches, Removing Fins from the Pins of. Roy B. Demming..... 395
Spark Coils, The Proper Adjustment of 111
Special Tools in the Rockford Machine Tool Co.'s Shop.. 772
Specialization 697
Speed Attained by *Mauretania*, Highest 613
Speed Attained by Ocean Liners, Highest 232
Speed Attained by Torpedo Boat, Highest 477
Speed Controller for Electrically-driven Grinders..... 396
Speed Counter, Vest Pocket. 907
Speed Indicator, Differential. 787
Speed Indicator on Railway Trains on the Continent... 26
Speed Reducing Gear 904
Speed Variator, R. W..... 262
Speed Trials of the *Connecticut* 90
Speeds of Drills, Constants for Finding. Peter Plantinga 473
Sperry, John B.:
Drawer for Drawings..... 804
Spindles, Home-made Machine for Boring Lathe. Ed. B. Eby 801
Spiral Broaching Machine, Lapointe 656
Spiral Conveyor, Problem of the. F. Webster..... 504
Spiral Cutting on the Milwaukee Miller, Heavy.... 463
Spiral Disk Grinder, New Besly 187
Spiral Gears, Derivation of Formula for Determining Spur Gear Cutter Number for. H. W. Henes..... 540
Spiral Gears, Information for Cutting. L. H. Georger... 887
Spiral Gears, Kearney & Trecker Three-spindle Attachment for Milling..... 817
Spiral Gears, To Find the Number of Cutter for. E. G. Eberhardt 43
Spirals, A Study in. Walter Gribben 522
Spirals, Change Gears for Milling Machine when Cutting 717
Spring and Weight Equivalents, Are 378
Spring Chuck Block. E. W. Norton 802
Spring Chucks. H. A. S. Howarth 107
Spring Collets, Hardening. Geo. T. Coles..... 471
Spring Collets, Making. J. J. Voelcker 246
Springfield Mch. Tool Co.:
Motor-Driven Brass Finishers' Lathe 576
High-Power Motor-Driven Lathe 820
Pneumatic Press 905
Springs, Failure of Rubber.. 213
Springs for Gas Engine Valves, The Design of. F. E. Whittlesey 585
Springs in an Engine Lathe, Tools for Winding..... 248
Springs, Securing Uniformity in Phosphor-bronze 27
Springs, Weights not the Equivalent of. Fred J. Miller 467
Sprinklers, The Arrangement of Flooring with Regard to. 522
Spur Gear Cutter Number for Spiral Gears, Derivation of Formula for Determining. H. W. Henes 540
Stand, Portable Vise 260
Standard Drawing Room Methods. M. R. Kavanagh 368
Spur Gear Hobbing Machine. 902
Spur Gear Hobbing Machine, Farwell Automatic 727
Square Threads, Widths of Tools for Cutting 552
Sregor:
Lubricant for Fitting Aluminum Threads 551
Stagger Feed, Bliss Press Fitted with 729
Standard Mchy. Co.:
Light Power Press 642
Standard Mfg. Co.:
Automatic Slotting Machine 335
Standard Notation for Engineering Formulas 380
Standard Notation for Engineering Formulas 508
Standard Welding Co.:
Some Examples of Electric Welding 553
Starter, A Novel Gas Engine. 614
Stauffer, M. B.:
Boring Long Cast Iron Cylinders 715
Staybolts, Making Nuts for Flexible 712
Steamships to be Built, Two New Enormous 613
Stop for Stock in Blanking and Progressive Dies. K. L. Ross 254
Square Thread Taps in Sets, Acme and 169
Starrett Quick Adjusting Micrometer, The 60
Stauffer, M. B.:
Solution for Plating..... 113
Stay-bolt Cutter, Landis.... 418
Steady Rest, Addition to Kink on the 716
Steady Rest, Substitute for. John McLeod 633
Steady Rest, Use of the. J. J. Voelcker 633
Steam Consumption in Any Steam Engine, Highest Efficiency as Regards..... 698
Steam Drop Hammer, Bethlehem 490
Steam Drop Hammers, Chambersburg Line of 739
Steam Drop Hammers, The Development of 803
Steam Engine, Large Horizontal Tandem 156
Steam Engine, Results of the Trials of the Field-Morris System for Increasing the Thermo-dynamic Efficiency of the 90
Steam Hammer Adapted to Small Drop Forging Work. 828
Steam Hammer, Cut-off Tool for the. John Brandle... 707
Steam Hammer, Reducing the Diameter of Tool Steel under the. Geo. T. Coles.... 319
Steam Heating Equipment, Quick Installation of 869
Steam, Materials for Control of Superheated 68
Steam Pipe Covering, Satisfactory 792
Steam Rock Drill's Variety of Uses 148
Steam-tight Joints, Defects in Threads for 504
Steam Turbine Driven Foundry Blowers, Sturtevant... 562
Steam Turbine of Novel Design 756
Steam Turbine, Westinghouse Double Flow 665
Steam Turbines in a Torpedo Boat, Success of 232
Steam Turbines, The Manufacture of Small. K. G. Smith 363
Steam Whistle Operated by Gas, Arthur Knapp..... 111

Steamship in Record-breaking Time, Machinery Fitted to British 232
Steamship Stern Frame and Rudder Post, Thermit Repair of 228
Steamships, The Unavoidable Vibration of 386
Steel and Cast Iron, Effect of Titanium on 834
Steel, Annealing High Speed. C. U. Scott 173
Steel, Annealing Novo and Blue Chip. P. W. Abbott. 178
Steel Bands as Power Transmitter 581
Steel for Milling Cutters, High Speed 453
Steel Imbedded in Concrete, Preservation of 870
Steel in Hardening, Shrinkage and Expansion of. J. F. Sallows 800
Steel, Loss of Life Entailed in the Making of..... 233
Steel Mills, Electrical Power to Drive all the Machinery in 27
Steel, New Use for Manganese 787
Steel, Nickel. E. F. Lake... 34
Steel, Notes on High Speed.. 523
Steel or Steel Alloys, New Method of Hardening 698
Steel Pieces, Die for Bending Cold Rolled. Engineer.... 472
Steel Plant of the U. S. Steel Corporation at Gary, Ind., New 90
Steel, Proper Cutting Speed for High Speed Cutting.. 608
Steel Shafts, Cutting off. John McLeod 715
Steel Ship, 50-year Anniversary of the 26
Steel, The Crystallization of. 310
Steel, To Clean Rusty Pieces of. J. M. Menegus..... 179
Steel, To Distinguish between High Speed and Ordinary Tool 232
Steel Trust and the Tariff, The 25
Steel, Vanadium. E. F. Lake. 65
Steel Very Important, Hardening of High Speed. Robt. Grimshaw 714
Steel with a Band Saw, Cutting. Ethan Viall 802
Steel Wool as a Substitute for Sandpaper 782
Steels, High Speed 255
Steels, To Anneal High Speed and Air Hardening. A. A. Stevenson 551
Steinle Turret Mch. Co.:
Full Swing Side Carriage Turret Lathe 257
Sterling, Frank G.:
Improved Circular Formed Tool-holder 324
Sterling Emery Wheel Mfg. Co.:
Combination Wet and Dry Grinder 576
Sterling Motor-driven Hack Saw Machine 55
Stevens, Obituary of Francis B. 751
Stevenson, A. A.:
Lubricant for Aluminum Cutting 551
To Anneal High Sneed and Air Hardening Steels... 551
Stock Support for Screw Machine. A. B. Christman... 49
Stockbridge Shaper, Down-feed for 193
Stock Keeping, Back to First Principles in 784
Stocking Cutter, Gould & Eberhardt 810
Stockvis & Sons Trading House 664
Stoever Automatic Pipe Bending Machine 57
Stoever Lever Pipe Threading Machine 52
Stop for the Lathe, Micrometer. J. L. Marshall..... 400
Stop Cock for Oil, Graduated. A. B. Christman 49
Stop for Drill Press, Automatic. S. Oliver 175
Storage System, Fuel Oil. E. Falkenrath 714
Stove Piping, Machine for Forming Ribbed Elbows in. 267
Straight Track on National Transcontinental Railway, Long Stretch of 308
Straightedge, Crack in Floor Poor 504
Straightening Machine, Rockford Drilling Machine Company's 488
Straightener, Johnson & Bassett Shaft 259
Straightening Shafts, Device for. Testing Room..... 803
Strength of Gear Teeth with the Velocity, The Variation of the. Ralph E. Flanders. 279
Strength of Malleable Iron Pipe Fittings, Bursting.... 455
Stresses in Screw Threads, The 153
Stresses, Mandrel Broken by Internal 176
Stresses, Maximum. John S. Myers.
1 425
2 617
3 790
Strong, Carlisle & Hammond Co.:
Oil Tempering Furnace.... 829
Stub-tooth Gear, The 536
Studs in a Lathe without Marring the Threads, Driving Threaded. D. A. Hampson. 325
Sturtevant Co., B. F.:
Steam Turbine 184
Two-, Four- and Eight-pole Motors 198
High Speed Large Volume Fan 415
Steam Turbine Driven Foundry Blowers 562
Sub-press Die, Sectional. L. A. Dorman 105
Subterranean Canal in France 90
Subtraction on the Slide Rule, Addition and. Wm. C. Michael 106
Success Dependent on Self Only 245
Suez Canal, Navigable Dimensions of 90
Superheated Steam, Materials for Control of 68
Superheating for Corliss Engines, Limit of 454
Surface Grinder, No. 3. Walker 409
Surface Grinder, Wilmarth & Morman 567
Surveying, Practical Points on. Chas. L. Hubbard.... 445
Swaging and Blanking Die, A. James J. Klein..... 715
Sweden and Germany, Railway Ferry Between..... 380
Swedish State Railways, Electrification of the..... 455
Swedish State Railways, Preliminary Work Begun on Electrification of 613
Swindler on Pacific Coast, Machinery 907
Sweet, S. H.:
Lubricant for Turning Copper 179
Swiss Files in America, Making.
1 9
2 80
System for the Blacksmith Shop. James Cran..... 865

Table for Machine Tools, Universal 456
Table for Upright Drill Press, Compound 817
Table, Pease Blue-print Cutting, Trimming and Sizing. 123
Tabulating Dimensions of Tools. Tool Designer..... 247
Tap Fluter, Garvin Automatic 197
Tap, German Design of Adjustable 867
Tap, Large Adjustable. Ethan Viall 708
Tap Making, The Influence of the Thread Miller on..... 20
Tap Sockets, Cincinnati Permanent 643
Taper Per Foot of Whitworth or English Taper Pipe Taps 799
Taper Shanks, Standard German 28
Taper Sleeve, Reaming a. W. H. Addis 326
Taper Tapped Holes, Tool for Calipering. F. Rattek..... 326
Taper Taps. Erik Oberg.
1 442
2 524
Taper Turning and Relieving, Attachments to the Hamilton Lathes for..... 573
Taper Turning Kink, A. S. A. McDonald 716
Tapers, Cincinnati Center for Turning 486
Tapers, Fixture for Planing Concave. J. F. A. Vogt... 48
Tapping and Reaming Attachment, Murchey Double Combination 484
Tapping Machine, Burke..... 116
Tapping Machine, Special Reaming and 640
Taps and Screws, Testing the Lead of. Erik Oberg..... 317
Taps and Tap Drills, Block for Holding. F. Rattek.... 400
Taps in Sets, Acme and Square Thread 169
Taps, Special and Adjustable. Erik Oberg 779
Taps, Taper. Erik Oberg.
1 442
2 524
Taps, Taper per Foot of Whitworth or English Pipe. 799
Taps, Whitworth or English Taper Pipe. Charles E. Smart 713
Tariff. A Curious Result of High 8
Tariff from Catalogues, etc., Australia Removes 613
Tariff, The Steel Trust and the 25
Tariff, Wages and the..... 697
Taylor & Fenn Co.:
Automatic Screw Slotting Machine 655
Technical Education for Machinists. F. Walsleben.... 630
Technical High School in Cleveland, New 669
Technical Supply Co.:
Duplex Blue-printing Machine 828
Technically-Educated People in Germany, Over-supply of 522
Technolexicon, Discontinuance of the 272
Technolexicon, German Society of Engineers Ask for Funds to Maintain..... 454
Telegraph Poles, Concrete Used for 26
Telegraph Poles, Glass..... 308
Telegraph (Wireless) to Render Government Independent of Commercial Telegraph Companies 157
Telegraphy Advance, Wireless 91
Telegraphy, New Record in Wireless 454
Telegraphy, Progress of Wireless Transatlantic 772
Telegraphy, Transatlantic Wireless 204
Telephone, A Miniature Head. 90
Telephone Service, Official Tests of De Forest Wireless Apparatus for 870
Telephony, Results Obtained by Wireless 786
Telescope Yet Made, Largest Reflecting 156
Tempering Drop Forging Dies. J. F. Sallows..... 320
Tempering Furnace, Oil..... 829
Tempering, Local Hardening and. William A. Painter.. 853
Tempering Solution, A. E. S. Wheeler 551
Terminal of Pennsylvania R.R., New Passenger..... 308
Test of Reinforced Concrete.. 534
Testing Device, German Bevel Gear 377
Testing Laboratory, Union Pacific's Railroad 380
Testing of Materials, The Elastic Limit and the. H. Ganssien 296
Testing Room:
Device for Straightening Shafts 803
Testing the Lead of Taps and Screws. Erik Oberg 317
Testing the Dividing Head of the Cincinnati Milling Machine 315
Theory and Practice..... 231
Thermit, Novel Use of..... 381
Thermit Repair of Steamship Stern Frame and Rudder Post 228
Thermo-Dynamic Efficiency of the Steam Engine, Results of the Trials of the Field-Morris System for Increasing 90
Thiel, Charles:
Inexpensive Tools with Inserted High Speed Cutters 48
Tools for Boring and Turning Spacing Collars..... 247
Thompson Grinder Co.:
Cylinder Grinding Attachment for Thompson Grinding Machine 566
Thompson Patent Clamp..... 118
Thread Cutting, Indicator for. John Bradford 109
Thread Cutting on the Engine Lathe, Multiple. R. H. Mitchell 326
Thread Gages, Making. A. L. Monrad 387
Thread in Pipe Fittings, Depth of 113
Thread Miller on Tap Making, The Influence of the... 20
Thread Milling Machine, Cutting Long Lead-Screws on the 860
Thread Systems, Screw. Erik Oberg 371
Threaded Holes in Wrought Iron Nuts, Casting..... 586
Threading and Cutting-off Machine, Improvement in Williams' Pipe 907
Threading Chasers 327
Threading, Circular Chasers for Internal 614
Threading Die Chasers, Grinding. C. C. Cleverdon..... 171
Threading Dies, Grinding.... 249
Threading, Holding Large Pipe While. Sirius..... 178
Threading Needle Points for Carbureters, Turning and. J. D. Coe..... 400
Threading Tool, A New..... 745
Threads and Turning Pulleys on a Drill Press, Milling Square 774
Threads, Cutting Triple. Fred Seaburg 248
Threads, Driving Threaded Studs in a Lathe Without Marring the. D. A. Hampson 325
Threads for Steam-Tight Joints, Defects in..... 504
Threads, Novel Method of Producing. Oskar Kylin... 320
Threads, Widths of Tools for Cutting Square 552
Three-Spindle Attachment for Milling Spiral Gears, Kearney & Trecker..... 817
Thumb-tacks, Substitute for. A Draftsman 254
Tidal Movement of the Sea, Power House to be Operated by 706
Ties by Crude Oil, Preservation of 308
Tighten a Loose Screw, How to 326
Tightener, A Belt..... 610
Tightening Device for Connecting-rod Brasses 611
Time, Machinery Fitted to British Steamship in Record-breaking 232
Tin Spots in a Phosphor-Bronze Bearing, Cause of.. 13
Tinning Cast Iron..... 86
Tire Turning, Rapid Locomotive 533
Titanium on Steel and Cast Iron, Effect of..... 834
Toerring Co., C. J.:
Machine for Drying Blueprints 829
Toggle Action Press of Unusual Size, Toledo..... 487
Toggle Joint Punch, A. J. E. Washburn 393
Toledo Mch. & Tool Co.:
Heavy Straight-Sided Press 197
Machine for Forming Ribbed Elbows in Stove Piping, etc. 267
Large Open-back Single Pitman Gap Power Press 338
Toggle Action Drawing Press of Unusual Size... 487
Double Pitman Gang Press. 906
Tool Chest, Draftsman's. I. G. Bayley 102
Tool Designer:
Wire-Turning Tool 177
Tabulating Dimensions of Tools 247
Expanding Chuck 254
Locking Device for Jigs.... 632
Reserve Chamber for Priming Pumps 798
Tool Holder, Improved Circular Formed. Frank G. Sterling 324
T. O. Olmaker:
An Example of Misplaced Economy 474
Tool-makers' Drill Pad. A. J. De Lille..... 804
Tool Steel, To Distinguish Between High Speed and Ordinary 232
Tool Steel Under the Steam Hammer, Reducing the Diameter of. Geo. T. Coles 319
Tools for Publication, On Writing Descriptions of... 370
Toothed Gear Memories. Internal 19
Torpedo Boat Destroyer Fastest Vessel in World, British 380
Torpedo Boat Destroyer *Tartar*, Speed of..... 686
Torpedo Boat Driven by Steam Turbines, New German 157
Torpedo Boat, Highest Speed Obtained by 477
Torpedo Boat, Success of Steam Turbines in..... 232
Toscot Flexible Metallic Belt Coupling 644
Tostevin & Cottie Mfg. Co.:
Toscot Flexible Metallic Belt Coupling 644
Touch with Users, Makers of Small Tools Should Keep in Close..... 868
Toulouse International Industrial Exhibition 534
Tracing System, Shop Order. Chas. M. Pond..... 692
Tracings and Drawings, To Flatten 881
Track on National Transcontinental Railway, Long Stretch of Straight..... 308
Track on Trans-Siberian Railroad, Russian Government to Construct Double..... 26
Trade, A Fault of Handling Foreign 612
Trade, Choosing a..... 378
Trade in a School? Can a Boy Learn a. E. R. Markham. 505
Trade in United States During 1907, Prosperous Condition of 534
Trades, Evening School of. E. R. Markham..... 793
Trading House and Its Head, A Well-Known Dutch..... 664
Train, Efficiency of Renard Road 871
Tramway, Railless 454
Transmission by Friction Drive, Power 352
Transmission, Efficiency of Automobile 799
Transmission of Power, A New Means of..... 381
Treatise as an Advertising Medium, Value of a..... 497
Trees, Cause of Winding Grain of 89
Trials of New Turbine German Cruiser, Results of.... 373

Triangle:
Kink for Lining..... 633
Triangle, Draftsman's. W. L. Breath 176
Triangle, Improved Draftsman's. R. W. Dickinson.. 798
Tribulations of an Inventor, The. John 365
Tricky Foundry Practice..... 799
Trigonometry, A Problem in.. 891
Triple Threads, Cutting. Fred Seaburg 248
Triplex Buffing Wheel..... 898
Trixie:
Center Prick Punch..... 173
Truck, A Good Box. Ethan Viall 396
Truck at Omaha Shops, "Wireless" 839
Truck Equalizer 552
Truing Device, Commutator.. 57
Truing Up Oilstones, Method of. J. J. Voelcker..... 399
Trunnions to a Large Drum, Fitting. J. T. Grimshaw.. 710
Tschudi-McBarron Mch. Co.:
Excelsior Sensitive Bench Drill 183
T-Square Blade, Steel Rule Recessed Into. John Coapman 716
Tube Railway in London, New 26
Tubes, A New Method of Manufacturing Copper..... 308
Tubing, Monnet & Moyne Machine for Bending..... 609
Tumbler Gear Design. John Edgar 207
Tunnel Connecting New York and Brooklyn 156
Tunnel, Construction of the Detroit River 166
Tunnel System for Freight, Mails, etc., Chicago's..... 156
Tunnel Through the Sierra Nevadas, Contemplated.... 870
Tunnel Under Great Belt, Project to Construct..... 454
Tunnels, Opening of Hudson and Brooklyn 466
Tunnels Under the Thames... 786
Turbine-Driven and Reciprocating Engine-Driven Vessels, Relative Cost of Repairs on 380
Turbine-Driven Foundry Blowers, Sturtevant Steam. 562
Turbine, Economy Tests of 7,500 K. W. Westinghouse-Parsons Steam..... 137
Turbine German Cruiser, Results of Trials with New... 373
Turbine of Novel Design, Steam 756
Turbine, Progress of the..... 298
Turbine, Recent Development of the Gas..... 788
Turbine, Sturtevant Steam... 184
Turbine, Westinghouse Double-Flow Steam 665
Turbines and Reciprocating Engines for Steamer, Combination of 123
Turbines for Japanese Cruiser, Giant 757
Turbines in Torpedo Boat, Success of Steam..... 232
Turbines in Use in United States, Number of..... 352
Turbines, New German Torpedo Boat Driven by Steam 157
Turbines Ordered for Power Stations of Swedish State Railways, Two Water..... 613
Turbines, Results of Tests Made on Curtis..... 26
Turbines, The Manufacture of Small Steam. K. G. Smith. 363
Turbo-Compressors, High Pressure. Alfred Gradenwitz 351
Turning and Boring Mill, Niles-Bement-Pond 30-inch. 818
Turning and Threading Needle Points for Carbureters. J. D. Coe 400
Turning Cone Pulleys, Special Lathe and Tool Equipment for. Wm. F. Groene..... 464
Turning End of Handles, Holder for. Original..... 112
Turning Hard Bronze Castings, Tool for. W. L. McLaren 707
Turning Kink, Taper. S. A. McDonald 716
Turning Machines, Shaft..... 385
Turning, Methods of Delicate. 13
Turning Mill, Gisholt Boring and 265
Turning Mill, Large Horizontal Boring and..... 861
Turning Pulleys on a Drill Press, Milling Square Threads and 774
Turning, Rapid Locomotive Tire 533
Turning Tapers, Cincinnati Center for 486
Turret Lathe, Finishing Flywheels, Hoist Drums and Piston Rings on the Libby. 805
Turret Lathe, Finishing Gas Engine Fly-wheels on the Gisholt 391
Turret Lathe, Finishing Pistons and Piston Rings on the Gisholt 475
Turret Lathe for Boring, Forming and Turning, Davis 189
Turret Lathe, Full Swing Side-Carriage 256
Turret Lathe, Libby..... 480
Turret Lathe, Wells..... 59
Turret Machine, Prentice Double-Head Multiple-Spindle Automatic 194
Twist Drills, How Billy Came to Use 610
Two-Cycle Vertical Oil Engine, De La Vergne..... 115

Underwood, H. B., & Co.:
Underwood Pneumatic Pipe-Bending Machine 338
Portable Facing Machine for Locomotive Frame Pedestals 563
Uniformity in Shop Forms... 307
Union Pacific Railroad's Testing Laboratory 380
Unit of Measurement Employed in Building Cheops Pyramid 879
Unit System of Machine Design 154
United States' Consumption of Coal 871
United States During 1907, Prosperous Condition of Trade in 534
United States Electrical Tool Co.:
Center Grinder and Frame for Portable Drill..... 649
Bench Grinder 824
Portable Electric Radial Drill 903
United States, Extent of the Automobile Business in the. 614
Universal Joint, Mutual Machine Co.'s 646
Universal Mch. Screw Co.:
Improvements in the Universal Multiple Spindle Automatic Screw Machine 654
Universal Milling Attachment, Home-made. S. B. Welcome 174
Universal Milling Machine's Many Uses 672
Universal Table for Machine Tools 456
Universal Tool and Cutter Grinder, Woods Engineering Co.'s 478
Universal Vise, Comment on. W. S. Leonard..... 473
University of Cincinnati, Cooperative Courses in Engineering at the..... 97
U. S. Geological Survey in Conserving Natural Resources, Work of the..... 911
U. S. Steel Corporation to Replace Steam Power by Gas Engines 26

Vacuum Brake Experiments.. 680
Valve of English Design, Hydraulic 451
Valves for Scrap Metal, The Value of Old..... 27
Valves, The Design of Springs for Gas Engine. F. E. Whittlesey 585
Van Rietschoten & Houwens:
Handsome Machinery House in Rotterdam 463
Vanadium and Auto Cylinders 279
Vanadium Steel. E. F. Lake.. 65
Van Norman Plain Milling Machine 409
Variable Load on Iron Beams, Influence of 535
Variable Speed Drive for the Woodward & Powell Planer 818
Variable Speed Motor, New Type of 153
Variable Speed Transmission, New Device for..... 789
Variator, R. W. Speed..... 262
Vault, A Record-Breaking Armor-Proof 131
Vegetation, Effect of Artificial Light on 871
Ventilation of Machine Shops, Heating and. Chas. L. Hubbard 1
Vertical and Horizontal Feed on a Vertical Milling Machine, Combined Automatic. 382
Vertical Turret Lathe, Bullard Rapid Production..... 119
Viall, Ethan:
What a Foreman Should Be 44
Cast Iron Brazing..... 179
Bill's Garage 220
Vertical Camera Bracket... 376
A Good Box Truck..... 396
Milling Attachment for the Lathe 544
Two-Jawed Lathe Chucks.. 625
Large Adjustable Tap..... 708
Making Knurls 716
Improved Driving Plate for the Milling Machine..... 797
Cutting Steel with a Band-Saw 802
Individual Machine Lighting 807
A Handy Filing Machine... 883
Vibration of Machinery on Ocean Liners 91
Vibration of Steamships, The Unavoidable 386
Victor Pipe-Threading Machine, The Loew Improved. 657
Vim:
A Few Handy Kinks..... 889
Vise, Comment on Universal. W. S. Leonard..... 473
Vise Jaws, Pump. S. Oliver. 42
Vise of Unique Design, Universal 305
Vise of Unusual Size, Pittsburg 58
Vise Parts, Milling Operations on. John Edgar..... 302
Vise Stand, Portable..... 260
Vise, The Bown Drill Press.. 339
Voelcker, J. J.:
Making Spring Collets..... 246
Method of Truing Up Oilstones 399
Use of the Steady Rest.... 633
A New Trick in Cat-Heads. 716
Vogt, J. F. A.:
Two Curling Dies..... 172
A Combination Cutting and Edging Die 177
Vose, James:
Industrial Notes from Europe ..61, 123, 202, 270, 340, 419, 495
Some British Machine Tools 148
Notes from the Olympia Exhibition 222

Wages and the Tariff..... 697
Wages, Fair. Entropy 176
Walcott & Wood Mch. Tool Co.:
20-inch Crank Shaper..... 822
Walker Grinder Co.:
No. 3 Surface Grinder 409
Dust Exhauster for Walker Surface Grinder 901
Walsh Co., H. C. H.:
Turret Bench Press..... 907
Walsleben, Fred.:
Calculating the Side of an Inscribed Polygon 553
Technical Education for Machinists 630
Waltham Mch. Works:
Waltham Automatic Precision Gear and Pinion Cutter 413
Gage Lapping Machine.... 486
Automatic Precision Gear Cutting Machine 744
Waltham Watch Tool Co.:
Van Norman Plain Milling Machine 409
War Vessels, Reinforced Concrete as a Protection for.. 534
Warning to Machinery Dealers and Manufacturers, A. 752
Washburn, J. E.:
A Toggle-joint Punch 393
Watch Parts in the Commercial Automatic Screw Machine, Making 681
Water Jackets, Method of Repairing Cracked 179
Water Motor, Coffield 575
Water Motor Grinder, Lippincott 263
Water Power for Electrification of Railways in Bavaria, Utilization of..... 157
Water Power in Switzerland, Electricity Generated from. 98
Water Powers of the World, Available 859
Water Power, The Value of a Developed 453
Water Powers of Streams of Northern Europe, Realization of Value of..... 870
Waterbury-Farrel Fdry. & Mch. Co.:
Automatic Screw Slotting Machine 481
Waterproofing Concrete 201
Water Supply, Aqueduct from Catskills to Increase New York City 870
Water-tight Joint, To Make a. J. D. Page 551
Waterways, Proposed Development of Our Internal.. 494
Watts, J. S.:
Laying Out a Propeller... 17
Wax Fillets, Device for Making. M. R. Kavanagh.... 249
Wax Fillets, Device for Making. W. H. Knowles..... 713
Wax Fillets, Tool for Shaping. Pattern Maker..... 49
Wealth, Mistaken Idea of the Source of 839
Webster, F.:
The Problem of the Spiral Conveyor 504
Weighing Machine, Locomotive 157
Weight Equivalents, Are Spring and 378
Weights not the Equivalent of Springs, Fred J. Miller. 467
Weinman & Co., C. J.:
Challenge High Speed Power Hack Saw..... 905
Welcome, S. B.:
Home-made Universal Milling Attachment 174
Welding of Dissimilar Metals, Electric 806
Welding, Some Examples of Electric 553
Well Pumping, Centrifugal Pumps for Deep 92
Weller, B. M.:
Drill Jig 547
Expansion Boring Bars... 629
Method of Making Screw for Drill Chuck 713
Wells & Son Co., F. E.:
Turret Lathe 59
Screw Machine 118
Chucking Lathe 193
Bench Centers 576
Motor Drive Arrangement for Wells Grinder 576
Wells Bros. Co.:
Standard and Limit Gages. 59
Werntz, Obituary of Orrin S. 498
Westbrook, M. H.:
Boring Locomotive Rods... 42
Boring Driving Box Brasses 321
Pneumatic Dolly 324
Lining Locomotive Guide Bars for Lateral Wear.. 468
Doing Lathe Work on a Drill Press..... 474
Western High Speed Multiple Spindle Drill 187
Westinghouse Double-flow Steam Turbine 665
Westinghouse Elec. & Mfg. Co.:
Type "SA" Machine Tool Motors 821
Motor for Rolling Mill Service 829
Wet Tool Grinder, Edgemont 646
Wheeler, E. S.:
Partial Case-hardening.... 551
A Tempering Solution..... 551
Wheels, New Idea in Car... 305
Whistle Operated by Gas, Steam. Arthur Knapp ... 111
Whitcomb-Blaisdell 20-inch Lathe 122
White Lead, To Test. M. E. Canek 551
White Star Line Planning to Build Steamships 840 feet Long 704
Whitman & Barnes Mfg. Co.:
New Types of Drills and Chucks 568
Whitney Mfg. Co.:
Chain Belt and Adjustable Pulley 745
Whittlesey, F. E.:
The Design of Springs for Gas Engine Valves 585
Whitworth or English Taper Pipe Taps. Chas. E. Smart 713
Whitworth or English Taper Pipe Taps, Taper per Foot of 799
Why. A Poor Reason..... 79
Widths of Tools for Cutting Square Threads 552
Wiley & Russell Mfg. Co.:
Green River Screw Plate for Brazed Brass Tubing 483
Williams (Arthur) Honored. 342
Williams (J. H.) & Co.:
"Agrippa" Pipe and Fittings Wrench 60
Drop Forged Planer Clamp. 264
Williams, R. C.:
A Screw Filing Jig 112
Williams Tool Co.:
Improvement in Pipe Threading and Cutting-off Machine 907
Williams, W. W.:
Driving Axle Centering Tool 469
Wilmarth & Morman Co.:
Surface Grinder 567
Combination Drill Cutter and Reamer Grinder.... 737
Winch, Self-sustaining 92
Wind Mills for Best Means of Generating Electricity, Testing 540
Winding Grain of Trees, Cause of 89
Windsor Mch. Co.:
Gridley Multiple Spindle Automatic Screw Machine 401
Wire, System of Winding Magnet Coils with Bare... 455
Wireless Apparatus for Telephonic Service, Official Trials of De Forest..... 870
Wireless Telegraph Service, Beginning of Public 534
Wireless Telegraph to Render Government Independent of Commercial Telegraph Companies 157
Wireless Telegraphy Advance 91
Wireless Telegraphy, New Record in 454
Wireless Telegraphy, Transatlantic 204
Wireless Telephony, Results Obtained by 786
Wireless Transatlantic Telegraphy, Progress of 772
"Wireless" Truck at Omaha Shops 839
Wire, To Test Galvanized... 179
Wire-turning Tool. Tool Designer 177
Wives of Our Readers, The.. 452
Wolfenden, J. W.:
Applying Leather Fillets to Patterns 633
Women Employed in Foundries 255
Wood, Effect of Moisture on. 68
Wood, Shrinkage of 328

Wood Turning Lathes, Fischer Installation of.... 268
Woods Engineering Co.:
Universal Tool and Cutter Grinder 478
Woodward & Powell Planer Co.:
Planer for Fluting Feed Rolls 652
Variable Speed Drive for the Woodward & Powell Planer 818
Work for their Money, Engineers Taught to Give Honest 839
Work, Hunting for 696
Workman, The Confidences of a. Mars 628
Workmen, The Growing Inefficiency of 230
Workmen, The Growing Inefficiency of..... 394
Workmen, The Growing Responsibility of 453
Workmen, The Personnel of.. 785
Worm Cutting Tool. Albert Andrews 252
Worm Gearing, Hindley 378
Worm Gears, Hobs for. John Edgar 37
Worm Wheel, Generating a Large 70
Worm Wheel Hobbing Machine, Automatic 907
Wrench, "Agrippa" Pipe and Fittings 60
Wrench, Quick-adjustment Pipe 783
Wrench, Ratchet Monkey.... 337
Wrenches, Removing the Fins from the Pins of Spanner. Roy B. Demming 395
Wright, Carroll D., Receives Cross of the Legion of Honor 273
Wrist Pin of a Cross-head, Turning the. W. L. McLaren 251
Writing Descriptions of Tools for Publication, On..... 370
Writing to Germany. Robert Grimshaw 471
Wrought Iron Nuts, Casting Threaded Holes in 586
Yale & Towne Mfg. Co.:
Electric Triplex Hoist.... 735
Yankee:
Cream Separator Bowl Balancing 16
Yieldable Gear Co.:
Safety Slipping Device for Machinery 199
Yoder, Howard D.:
Changing Drawings Quickly 106
Smoothing Wrinkled Blue Prints 112
Contour Gage 253
Yorgensen, P.:
Fixture for Grinding Angular Milling Cutters... 323
Micrometer Attachment for Reading Ten-thousandths 399
Zange, Max C.:
Cincinnati Center for Turning Tapers 486
Zeh & Hahnemann:
Armature Notching Machine 268
Ziegler, Y.:
Making Piston Rings..... 629
Method of Accurate Drilling 885
Zinc, Impregnating Cast Iron with. M. B. Stauffer..... 179
Zucker & Levett & Loeb Co.:
Triplex Buffing Wheel.... 898